ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF

THE ILLINOIS STATE MEDICAL SOCIETY

VOL. LIX | OAK PARK, ILL., FEBRUARY, 1931 | No. 2

ILLINOIS MEDICAL JOURNAL

Published monthly by the Illinois State Medical Society under the direction of the Publication Committee of the Council.

GENERAL OFFICERS, 1930-1931

PRESIDENT.....WM. D. CHAPMAN, Silvis
PRESIDENT-ELECT.....R. R. FERGUSON, Chicago
FIRST VICE-PRESIDENT.....B. G. WILCOX, Joliet
SECOND VICE-PRESIDENT.....OTTO HUBER, Chicago
TREASURER.....A. J. MARKLEY, Belvidere
SECRETARY.....HAROLD M. CAMP, Monmouth

THE COUNCIL

E. H. Weld,	1st District, Rockford	1932
E. E. Perisho,	2nd District, Streator	1932
F. R. Morton,	3rd District, Chicago	1932
J. S. Nagel,	3rd District, Chicago	1931
Thomas P. Foley,	3rd District, Chicago	1933
E. P. Coleman,	4th District, Canton	1931
S. E. Munson,	5th District, Springfield	1931
Chas. D. Center,	6th District, Quincy	1933
I. H. Neece,	7th District, Decatur	1931
Cleaves Bennett,	8th District, Champaign	1932
J. W. Hamilton,	9th District, Mt. Vernon	1933
J. S. Templeton,	10th District, Pinckneyville	1933

EDITOR
CHARLES J. WHALEN.....25 E. Washington St., Chicago

GENERAL COUNSEL
FRANCIS X. BUSCH.....231 S. La Salle St., Chicago

PERMANENT HISTORIAN
IRVING S. CUTTER.....301 East Chicago Ave., Chicago

MEDICO-LEGAL COMMITTEE
J. R. BALLINGER, *Chairman*.....2724 W. North Ave., Chicago
GEORGE H. WEBER, *Secretary*.....Peoria

EDUCATION COMMITTEE
MISS JEAN MCARTHUR, *Secretary*..185 N. Wabash Ave., Chicago

SCIENTIFIC SERVICE COMMITTEE
JAMES H. HUTTON, *Chairman*..6056 Cottage Grove Ave., Chicago
HAROLD M. CAMP, *Secretary*.....Monmouth

PUBLICATION COMMITTEE
J. W. VAN DERSLICE, *Secretary*.155 N. Ridgeland Ave., Oak Park

Outside of editorial or allied views or statements that are the authoritative actions of the Illinois State Medical Society, the organization denies responsibility for opinions and statements published in the ILLINOIS MEDICAL JOURNAL. Views expressed by the various authors and views set forth in various departments in the JOURNAL represent the views of the writers.

State Society will pay no bills for legal services except those contracted by the Committee. Notify the Chairman at once. Do not employ attorneys.

Send original articles, advertising copy, cuts and all communications relating to advertising to Dr. Charles J. Whalen, c/o ILLINOIS MEDICAL JOURNAL, 185 N. Wabash Ave., Chicago.

Membership correspondence to Dr. Harold M. Camp, Monmouth, Ill.

Society proceedings and news items and changes in the mailing list to Dr. Henry G. Ohls, Managing Editor, 1618 Juneway Terrace, Chicago.

Contributors will submit all copy for publication typewritten on standard size paper and double spaced. Copy not complying with this rule will be returned, if convenient.

Subscription price of this JOURNAL to persons not members of the Illinois State Medical Society is $3.00 per year, in advance, postage prepaid, for the United States, Cuba, Porto Rico, Philippine Islands, Hawaiian Islands and Mexico. $3.50 per year for all foreign countries included in the postal union. Canada, $3.25. Single current copies, 50 cents.

Editorials

MEDICAL PROFESSION SHOULD CONTROL AFFAIRS MEDICAL

"Render unto Caesar the things that are Caesar's" knew never a more applicable tangent than in the necessity for the medical profession to retain control, direction, administration, and positive performance of matters medical at every angle of the present economic crisis and its ramifications.

Of these one of the most urgent is the necessity to supply medical services at limited prices to persons of limited means. The poor and the destitute of course deserve and receive the finest of medical and surgical services without charge. For parallel professional services the wealthy pay as a rule generous fees. Both of which ideas would seem to be in keeping with the basis of logic and equity. For the wealthy to pay for the cost of illness for the poor and destitute is another commendable trait.

But when the wealthy through ideas of mistaken philanthropy and open-heartedness, by means of endowed foundations, part pay clinics or corporations practicing medicine, endeavor to assume responsibility for the cost of illness to persons of self-respecting, wage-earning ability, the error is great and the responsibility involved quite reprehensible.

Yet this attempt at pauperizing the great middle-class—and of a verity it is nothing less than that—is but one of the many steps current in search of an avenue of relief for the strain of the cost of illness among persons of moderate incomes, or assets.

That this attempt is of the laity for the laity should speak with a brazen tongue of alarm into the ears and hearts of the self-centered physician who feels that economic problems of this nature are the burden for the other doctor and not for himself. There is no royal road to immunity in the days of the plague. Either the pest must be controlled or it will control the

community. The profession stands face to face with a menace not a chimera. The self-respecting citizen of moderate means has this problem that he must solve. He spurns and rightfully the patronizing charity of the wealthy laity. Yet he is manifestly unable—and sometimes a bit unwilling to pay for the alleged high cost of hospitalization and other service necessary in the care of the sick, as well as the bill for the doctor. Here is a community problem as vexatiously important to the public welfare as an outbreak of smallpox, diphtheria or typhus. And it is up to the doctors themselves to meet it, or to lose control of the practice of medicine. Neither dawdling nor shilly-shallowing will evade the issue.

The time is not far distant when what is now a dilemma will become an alternative. There is room for optimism in the knowledge that if physicians once realize that the laity is determined to have the problem solved that the doctors will take a leaf out of their experiences in other matters, where unheeded warnings have led them into economic and professional pits. Not a day is to be lost in the preparation of a plan that will solve the problem of this distribution and allottment of moderate priced medical services.

For already it begins to look as if this obvious problem would be solved through some plan that is laid out by lay agencies. Anything evolved from such a group, will here, as it has done elsewhere, leave the doctor in the role of the under dog, instead of standing at the helm, and he will be lucky to have voice and authority enough to howl even when he is kicked.

THE 1931 ANNUAL MEETING

The 1931 Annual Meeting of the Illinois State Medical Society to be held in East St. Louis on May 5, 6 and 7, 1931, should be a banner meeting of the Society. This will be a Southern Illinois Meeting as all of the 34 counties of Southern Illinois are joining together to make it a real meeting. East St. Louis has not been the host at a meeting of the Illinois State Medical Society for more than thirty years, and the St. Clair County Society is making every arrangement possible to prove themselves to be excellent hosts.

The exhibits, general headquarters and four of the scientific sections will be housed in the large, new Shrine Temples, one of the finest and best arranged buildings in the State, for meeting purposes. The official hotel for the meeting is the Broadview, a large and beautiful new building well adapted for the purpose. Dr. I. L. Foulon is General Chairman of the Committee on Arrangement, and Dr. G. C. Otrich, the secretary. These competent men have selected a well balance staff of St. Clair County physicians for their various committees, as follows:

General Chairman, I. L. Foulon, East St. Louis,

Secretary—G. C. Otrich, Belleville.

Contact Committee—F. Gunn, Chairman; W. Crotty, East St. Louis; J. Fulgham, East St. Louis; O. Klug, East St. Louis.

Entertainment Committee—O. W. Knewitz, Chairman; A. B. McQuillan, East St. Louis; C. E. Hill, East St. Louis; O. J. Culbertson, East St. Louis; R. F. Stanton, East St. Louis; E. H. Trippel, O'Fallon.

Exhibits Committee—L. A. Ryan, Chairman; O. H. McCann, East St. Louis; H. H. Tanzer, East St. Louis.

Finance Committee—R. Tharp, Chairman.

Information and Hotels—J. J. Donahue, Chairman; C. Wilson, Belleville; W. Wilhelmj, East St. Louis.

Meeting Places—H. A. Cables, Chairman; M. E. Brennan, East St. Louis; John Gunn, Belleville.

President's Dinner—H. M. Voris, Chairman; C. E. Hill, East St. Louis; W. Crotty, East St. Louis; E. H. Holten, East St. Louis; L. E. Wedel, East St. Louis.

Publicity Committee—W. Griffith, Chairman; E. H. Wangelin, Belleville; R. Campbell, East St. Louis; T. V. Boyd, East St. Louis.

Reception Committee—M. E. Brennan, Chairman; C. E. Eisele, East St. Louis; L. L. Madden, East St. Louis; H. H. Hurd, East St. Louis; A. M. Aszmann, East St. Louis.

Transportation Committee—T. V. Boyd, Chairman; O. B. Boyd, East St. Louis; W. Griffith, East St. Louis; E. H. Holton, East St. Louis.

Women's Auxiliary—Mrs. O. J. Culbertson, Chairman; Mrs. A. S. Aszmann, East St. Louis; Mrs. I. L. Foulon, East St. Louis; Mrs. L. E. Wedel, East St. Louis; Mrs. H. Voris, East St. Louis; Mrs. Harvey Smith, East St. Louis; Mrs. W. McNary, East St. Louis; Mrs. C. P. Renner, Belleville; Mrs. E. Bechtold, Belleville; Mrs. H. J. Frein, Belleville; Mrs. G. C. Otrich, Belleville.

Arrangements have been made with the leading hotels whereby all requests for reservations during the meeting will be referred to the Hotel Committee, so that all available hotel rooms will

be placed at the disposal of the Society, and so that an accurate record of all reservations will be had. Dr. J. J. Donahue, East St. Louis, chairman of this committee, will be pleased to make reservations for all members of the Society desiring same. It is hoped that these requests will be sent in as early as possible, so that no one will be disappointed.

We will give more information concerning the arrangements, and data relative to the meeting in the JOURNAL next month.

EXHIBITS AT THE 1931 ANNUAL MEETING

One of the interesting features of all modern medical meetings is the exhibits. At East St. Louis, we will have one of the finest exhibition halls in the state of Illinois. The spaces are all unusually large, and there will be uniform booth set-ups all ready to be occupied by the exhibitors. There will be an unusually large number of fine scientific exhibits this year, and any member of the Illinois State Medical Society who has something that he would like to exhibit, that is free from all advertising, should make application at once with the Secretary, stating the nature of the exhibit, naming the features of general interest, and proper space for same will be allocated. Only commercial exhibits that are on the approved list of the American Medical Association will be shown at the meeting. Arrangements are being made whereby our exhibitors will be well cared for at the meeting. Every exhibit space is unusually adapted to suit the convenience of our exhibitors, and each is a desirable space, regardless of price.

We hope that all physicians attending the meeting will look over the many exhibits to be shown both commercial and scientific exhibits, and see the improvements that are being made in all lines of accessories from year to year.

Any ethical prospective exhibitors interested in having a display at the East St. Louis Meeting, on May 5, 6 and 7, 1931, should write to the Secretary, Dr. Harold M. Camp, Monmouth, Illinois, at once for complete information, diagrams and application for space. These will be promptly furnished by return mail.

A synopsis of each exhibit will be given in two issues of the ILLINOIS MEDICAL JOURNAL before the meeting, and will also be printed in the official program of the meeting.

On account of the fact that the meeting will be held on the state line, across the Mississippi from one of the great Metropolitan Districts of America, we will have hundreds of visitors at the meeting from Missouri, and other states as well, which should be an additional appeal to prospective exhibitors.

The Illinois State Medical Society has an unusual appeal this year to prospective exhibitors, and the attendance should be unusually large. The St. Louis Medical Society, and the Missouri State Medical Association have given every assurance that they will aid our Society in making the meeting a successful one, and will give it much publicity on the West Side of the river.

It is hoped that all members of the Illinois State Medical Society will favor our exhibitors, and make them feel that it is worth the expense and effort to have exhibits at the Annual Meeting of the Illinois State Medical Society.

DOCTORS WISHING TO PRESENT PAPERS BEFORE THE MEDICAL SECTION OF THE ILLINOIS STATE MEDICAL SOCIETY

Physicians desiring to present papers before the medical section of the Illinois State Medical Society are urgently requested to send their applications at once. The annual meeting is held early in May, the interval between now and the meeting is very short. Applicants are advised to act quickly. The program is being made up, only a limited number of papers can appear on the program.

The officers of the section are Lowell D. Snorf, chairman, 25 E. Washington Street, Chicago, and Warren Pearce, Secretary, Quincy.

DOCTORS WISHING TO READ PAPERS BEFORE THE SURGICAL SECTION AT THE STATE SOCIETY SHOULD QUALIFY AT ONCE

Those wishing to read papers before the surgical section at the State meeting at East St. Louis, next May, will kindly communicate with the officers of this section. Dr. J. H. Bacon, Peoria, Ill., Chairman; Dr. Jas. T. Gregory, 826 E. 61st St., Chicago, Ill., Secretary.

PROTEST NOW AGAINST THE PROPOSED JONES-COOPER MATERNITY BILL

Protest *now* against the purposed Jones-Cooper bill now up in the House of Representatives instead of waiting until this great national injustice becomes a law.

This continuation of the Sheppard-Towner Act aimed to revive and to perpetuate federal control over state activities in the field of maternal and infant hygiene under the direction of the Children's Bureau is now in the House of Representatives where it has been referred to the Committee on Interstate and Foreign Commerce. Protests against this bill should be filed immediately by the profesion with members of the House of Representatives as well as against a bill of similar purport, H. R. 12995, providing that the federal government shall co-operate with the state in promoting the general health of the rural population of the United States and the welfare and hygiene of mothers and children. The Jones-Cooper bill was passed by the Senate. Jan. 10. On Jan. 20 the Committee on Interstate and foreign commerce of the House gave this and the similar bill a hearing. Neither of these bills nor any similar legislation should be enacted. All such legislation has already been condemned by the House of Delegates of the A. M. A.

THE AMERICAN MEDICAL ASSOCIATION ADOPTS TELLING RESOLUTION AGAINST PERPETUATING THE SHEPPARD-TOWNER MATERNITY AND INFANCY ACT

At the Detroit meeting of the American Medical Association the following resolutions were offered by the Board of Trustees adopted by the House of Delegates on recommendation of the Reference Committee on Legislation and Public Relations:

WHEREAS, The American Medical Association is in entire sympathy with the cooperative efforts of federal and state agencies to establish and develop official local health organizations for the conduct of those activities which are generally recognized as the proper functions of such health departments; and

WHEREAS, The usurpation of any public health function by any lay bureau of the federal government which, through allotments of federal subsidies for special health service, seeks to duplicate and administer duties and functions already placed by law on the United States Pub-Health Service; and

WHEREAS, The United States Public Health Service has in the past efficiently discharged its duties with respect to such matters and now, through recent reorganization, has been provided with enlarged facilities for carrying on such work; and

WHEREAS, An effort is now being made to revive and perpetuate the federal subsidy system established under the defunct Sheppard-Towner Maternity and Infancy Act, which authorized the payment of state subsidies over a fixed period of years, on an arbitrary and irrational basis of population, without reference to the ascertained sanitary and health needs of the several states or to their ability to meet their own needs; and

WHEREAS, The payment of such subsidies was made dependent on the surrender by the legislatures of the several states, to the federal government, of the right to supervise and control state activities in the selected field of public health; and

WHEREAS, This system after seven years' trial under the administration of a lay bureau effected no improvement in the field of public health in which it was operative, notwithstanding the expenditure of more than 11 million dollars of federal and state money; and

WHEREAS, In the judgment of the House of Delegates of the American Medical Association, any such system tends to destroy local initiative and sense of responsibility and to pay federal funds for purposes named by the federal government to states not in need of federal aid; be it

Resolved, That the House of Delegates of the American Medical Association condemns as unsound in policy, wasteful and extravagant, unproductive of results and tending to promote communism, the federal subsidy system established by the Sheppard-Towner Maternity and Infancy Act and protests against the revival of that system in any form;

Resolved, That it is the sense of the House of Delegates that each state should be left free to formulate its own health program, with the cooperation of the United States Public Health Service if desired by the state, free from any inducement or compulsion in the way of federal reward or coercion;

Resolved, That any legislation involving cooperation between the federal government and

the several states in the field of public health must, in the interest of efficiency and economy, in the judgment of the House of Delegates, be administered under the joint supervision and control of the United States Public Health Service and the state health authorities; and be it further

Resolved, That copies of these resolutions be sent immediately to the President of the United States and to every Senator and Representative in Congress.

A supplementary report to the above was adopted at the same meeting:

Resolved, That the Board of Trustees be requested to initiate as speedily as practicable a movement to enlist every state medical association and county medical society, and every member of the medical profession, in a movement to carry into effect the policy of the American Medical Association, as defined in the preceding resolution, with respect to co-operation between federal and state governments in public health activities.

Both resolutions were referred to the committee on legislation and Public Relations. In approving the resolutions the committee made the following notation:

Your committee has carefully considered the excellent resolution presented by the Board of Trustees relative to federal aid for maternal welfare.

The resolution shows evidence of most thorough study and careful preparation.

The committee feels that the beneficial effect of this resolution when passed by the House of Delegates of the American Medical Association should have a far-reaching beneficial effect and should be of great assistance to the profession throughout the United States in its campaign of education of the public in which we are endeavoring to show the menacing effect of paternalism so beautifully exemplified in the so-called Sheppard-Towner and similar forms of legislation.

For a period of ten years the ILLINOIS MEDICAL JOURNAL has fought consistently against the enactment in this country of all forms of legislation as typified in the Sheppard-Towner Act.

A similar legislation to the maternity and infancy statute is an invitation to progressive encroachment by the Federal Government on the rights and independence of the state. It opens the way to snooping interference by Washington with the private affairs of domestic life.

The evil of federal interference might be tolerated if it could be shown that the benefits to mankind were sufficiently large and could be obtained in no other way but nothing of this sort has been shown; only recently we demonstrated in the columns of this journal that Illinois, one of the five states that refuse to submit to Sheppard-Towner law dictation had the lowest infant and maternity mortality rate in the country.

The Sheppard-Towner law has been wasteful, extravagant and unproductive of results, and has a tendency to promote communism; and we believe that it should be definitely shelved so that each state may be left free to formulate its own health program with the co-operation of the United States Public Health Service if desired by the State, free from any inducement or compulsion in the way of federal reward or coercion. Our attitude on Sheppard-Towner and similar forms of legislation is that of ex-president Coolidge's doctrine of state rights and responsibility.

A FEW MORE FIGURES SHOWING THAT THE MATERNITY ACT WAS A FLOP EVERYWHERE EXCEPT AMONG THE JOBHOLDERS

KENTUCKY AND VIRGINIA MUST FACE STATISTICS THAT SHOW INCREASED INFANT AND MATERNAL MORTALITY EVEN WHEN MATERNITY ACT WAS FUNCTIONING WITH EASE AND EXPERIENCE

Kentucky and Virginia have had increases in the deaths of mothers and children during the nine years of operation of the Sheppard-Towner act. On the contrary, Illinois, that refused to accept the mis-cast legislation, has a reduced rate of mortality in these two classifications.

Health officers in Virginia and in Kentucky have been vociferous and extravagant in their laudation of the Sheppard-Towner legislation.

Figures received recently show that as late as 1928 there were marked increases over 1927.

In Kentucky in 1927 the infant mortality rate was 60. In 1928 this rose to 71. The maternal

mortality rate in 1927 was 49. In 1928 it rose to 60.

In Virginia, the infant mortality rate that was 75 in 1927 rose to 76 in 1928. During this same period the maternal mortality rate rose to 75 from 62.

What is true of statistics in these two states that championed so loudly the Sheppard-Towner legislation is coincident with results throughout the area leaning on this socialistic federal aid crutch. Throughout the entire birth registration area the figures rose from 65 in 1927 to 68 in 1928 where infant mortality was concerned and to 69 from 65 in the case of maternal mortality.

Here indeed is food for thought. This increase came not during days of experimentation and trial when it might have been expected that mistakes and errors or lack of routine might have worked havoc with the results but when the maternity legislation was functioning with ease.

It is another example of trying to make a crow sing like a nightingale. Inherent merit to function up to its advertised qualifications does not dwell in the Sheppard-Towner bill, nor in any other maternity act that has been gold-bricked throughout the commonwealth. Such unconstitutional legislation fails not so much because it is unconstitutional but because it is inept, unwarranted and unqualified. Unscientific in its initial premise it is bound to wither and fall when adjudged by scientific standards and put to the acid test of saving life.

Even if such legislation were scientific, which it is not, or constitutional, which it is not, nor can ever be and rest in consonance with the spirit of 1776, there is but one theory by which it might be justified. And this theory is that the respective and individual states in the union would be lacking in intellectual, moral and financial resources for the care of their purely local problems. Community death rate will always remain a local problem, basically, at least.

As yet no State has reached that depth of slattern being. But if there is a continuance of Federal policy of purchasing or of otherwise usurping the power to intermeddle in purely local affairs, the debauchery of the states and of their sense of irresponsibility must follow as surely as the night the day.

This deplorable statistical situation as revealed in returns as cited from Kentucky and Virginia is the index to an even more deplorable trend in vital conditions. It is the handwriting on the wall, bold enough to startle the most sanguine.

Much as we would like to believe in Santa Claus, truth remains that "jolly old Kris Kringle" with his package of gifts and sweetmeats is but a fiction. And Federal Aid of the sort involved in the maternity legislation programs is a bigger myth than he.

If the states must have government aid in their health programs here is proof positive of the crumbling of the outer line of defense of first principles of this democracy. Instead of lending support to programs looking to a revival of the maternity act, the scientific, rational, and true American thing to do is to exert unremittingly all possible influence towards restoration in practice of the principles of American government. The spine of such principles lies in the precept that responsibility is coincident only with power, and that like freedom, power without responsibility becomes nullified.

Almost ad infinitum might examples be cited of the failure of the maternity act to fulfill its promises. But what is true of Kentucky and Virginia is true of every other community in which this mistaken panacea had sway. The maternity act was a flop for everybody but the job holders who got fat salaries under its flag. Illinois can thank its stars that whatever else its burdens may have been during the last decade the maternity act was not one of them. It will pay a few other communities to take a leaf out of Illinois' books in this regard.

MEN WHO HAVE ACHIEVED FAME OTHER THAN MEDICINE

Dr. Bernard S. Maloy combines with active practice the distinction of having compiled and published notable work on Medical Jurisprudence as well as Fame as Bibliophile.

Dr. Bernard S. Maloy's recent work, "Legal Anatomy and Surgery," has enjoyed unprecedented popularity among the legal profession, and is still a best seller. The book was well worth the ten years expended in its process of making, and the concentration of thought and interpretation of experience combined in its production. The text is easy and fluent in its

style and makes pleasant and instructive perusal even by the lay reader. For the professional man and savant it is a gold mine.

Not only did Dr. Maloy compose the text unaided but many of the beautiful illustrations which enrich the pages are his. This accomplished physician is a litterateur and skilled artist. His work in art compares favorably with that produced by other well known scientific and anatomical draftsmen. It is interesting to note in this connection that a great part of these drawings were accomplished with the aid of a magnifying glass while the finished product is as distinct and smooth as a steel engraving. Surely, there are not many doctors who can draw well enough to illustrate a book!

For a number of years Dr. Maloy conducted classes in anatomy, surgery and kindred subjects for lawyers. For this purpose he spent a great deal of time in courts where he sat with the lawyers and prompted them in their examinations of witnesses. In this way Dr. Maloy found the opportunity of simplifying medical jurisprudence. His book is a direct outcome of the time so consumed.

A native Hoosier, he was born in Rensselaer, Indiana, but was graduated from the Medical Department of the University of Illinois. Dr. Maloy entered into active practice and soon achieved the reputation of a leader in his chosen profession. Especially did he acquire note by his management of pneumonia, in the treatment of which dread disease he has most remarkable success. During the great influenza epidemic of 1918-1919, while an acting surgeon in the U. S. Public Health Service, he evidenced remarkable technique in such therapy and bore out his reputation for medical skill and judgment of the man.

Like other able men who accomplish much, Dr. Maloy is many sided. Nothwithstanding the pressure of his professional and literary work, he has found time to accumulate one of the best classical, ecclesiastical and antiquarian libraries in the country. He has shown rare judgment in the selection of the books. This library is especially rich in volumes of the famous Bohn edition, which were published in England about 1840 and have been out of print for many years.

Literary connoisseur as is Dr. Maloy, he says: "These old authors are like wine properly aged." He has read and reread many of these books, the greater part of them, so he claims, being wonderfully interesting and instructive. His marginal notes have been numerous. These together with many cross-notes are of great assistance as a means of reference. All his writings are enriched and illuminated by apt quotations from these literary giants of antiquity. Much of Dr. Maloy's philosophical outlook upon life is a direct result of his deep and inspiring study of the famous authors of ancient times.

It is interesting to peer into the shelves of this valuable library. Included in the remarkable collection are the works of Aristotle, Homer, Aristophanes, Hesiod, Callimachus, Theognis, Thucydides, Xenophon, Demosthenes, Plato, Catullus, Tibullus, Herodotus, Strabo, Sophocles, Aeschylus, Sallust, Plautus, Florus, Pindar, Euripides, Cicero, Horace, Ovid, Virgil, Lucan, Terrence, Lucretius, Josephus, Tacitus, Plutarch, Persius, Juvenal, Epictetus, Martial, Suetonius, Pliny the Elder and Pliny the Younger, Livy, Petronius, Propertius, Aristaenetus, Athenaeus, Apuleius, Eusebius, Socrates, Bede, Ingulf, Theodoret, Evagrius, Mallet's Northern Antiquities, Matthew Paris's Chronicles, Roger of Wendover, William of Malmsbury, Marco Polo's Travels, Pepys' Diary, Petrarch, Dante, Cellini, Tasso, Rabelais, and dozens of others. What a wealth of wisdom and literary richness!

Naturally, from one so literally inclined as this we would expect to find some poetic ability also; and in this expectation we are not disappointed. The poetic muse also has visited this many-sided man, and we find under his name lines of real worth.

Such men as Dr. Malloy are leavening spots in human nature.

THE INCONSISTENCY OF OUR OFFICIAL FAMILY AT WASHINGTON

To ask for millions of dollars for maternity work, an added burden of millions of dollars upon the already wage-cut, income-slashed heavy tax-payer in these troublous times is much like overturning a war-chest to buy lace-paper napkins for the tearooms in the old home town. Congress is being opposed by the nation's chief executive in its efforts to meet the unemployment situation by appropriating money to take

care of mothers and children starving for food, and suffering for shelter and clothes in the drought stricken sections. Yet Congress is being besought by the same executive to lay on more taxes to send out instructors to tell women how to cook food that they have not got; to sew baby clothes from material that they can not procure and how to keep ship-shape shelter that is not theirs.

The paradox is neither pretty nor philanthropic. On the other hand it is both parlous and political. Political! "Ay, there's the rub." Politics not only makes strange bedfellows, but plays the purse false and thumbs the nose at reason, judgment and the crying need. The Sheppard-Towner bill in a new guise and with a fresh Punch and Judy face knocks again at the tax-payer's door. It knocks with a stout political gavel and makes a stronger and a louder noise than do the pitiful palms and fists of destitute mothers and children. It all depends on whose nest is to be feathered as to where the plums go.

"Ah, consistency thou art a jewel." After all it is not woman but a political grabfest statute of which it should be written, "Faugh, thou, poor inconstant jade."

DR. HEMENWAY DIES

On January 1, 1931, Dr. Henry Bixby Hemenway died at the age of 74. For eleven and one-half years Dr. Hemenway filled the position of medical assistant in the division of vital statistics of the State Department of Public Health and in that capacity had charge of classifying deaths according to cause. He first came into State health service on February 12, 1918, as a district health superintendent, a position he filled for about 18 months.

The place left vacant by Dr. Hemenway's death is one of the most important in the division of vital statistics. Proper classification of deaths requires a wide knowledge and great skill relating both to statistical practice and to medicine.

In addition to his work in the Department of Health, Dr. Hemenway produced a number of books and many scientific articles on public health. He was well informed on medico-legal matters, especially in the field of public health, his writings on that subject having been freely quoted in certain decisions of the Illinois Supreme Court.

Credit was given to Dr. Hemenway for discovering the source of a great scarlet fever epidemic which swept the metropolitan area of Cook County in 1907 and he was commended for the courage which he displayed in connection with handling the situation.

POORLY SELECTED CHARITY IS WORSE THAN NONE—A PERIL RATHER THAN A PHILANTHROPY.

"And the greatest of these is charity!"

But there's no philanthropy in sending dancing shoes to a cripple or blooms to a blind man.

Quite in line is the misdirected benefaction of wealthy, kind-hearted persons, who with all the generosity of those highly impressionable nervous systems frequently prevalent among the wealthy laity let their nerves and their hearts get the better of their sense of justice, economics, and essential need.

When such a mishap occurs what do we find in their midst?

Only too often there occurs a "medical institute" or a "free health center" for all sorts of patients, whether these be needy and unable to pay or rich and parsimonious.

Noble in purpose as may be these endeavors on the part of the ill-advised laity, Heaven knows their results are often over productive of exactly the opposite of what was intended. Instead of helping the destitute poor to rise to better stations such ill-advised charities tend to submerge the self-respecting poor into the path and swamps that lead to pauperization.

EDUCATIONAL COMMITTEE OF THE ILLINOIS STATE MEDICAL SOCIETY ENJOYS A REPUTATION OF BEING AN AUTHORITY ON STATE MEDICINE. STATE MEDICINE ATTRACTS ATTENTION OF COLLEGE DEBATING TEAMS.

During the month of January, the Educational Committee of the Illinois State Medical Society has supplied facts, statistics and other material relative to the true nature of state medicine to debating teams of various colleges including Northern State Teachers College, and Michigan Normal College of Kalamazoo, both of

Michigan; De Kalb Normal, Illinois and Greenville College.

For the month of December the educational committee supplied package libraries to debators in seven colleges as follows: Monmouth College, Macomb Normal, Bradley College, Shurtleff College, all of Illinois; Northern Michigan State Normal, Marquette, Michigan: University of Toledo, Toledo, Ohio; Purdue University, Lafayette, Indiana.

ILLINOIS CONGRESS OF PARENTS AND TEACHERS GIVES VALUABLE SERVICE TO EDUCATIONAL COMMITTEE

At the request of the Educational Committee, Mrs. N. G. Symonds of Hinsdale, on Feb. 3, an officer of the Illinois Congress of Parents and Teachers addressed a joint meeting of the Woman's Auxiliary to the Vermilion County Medical Society and the Danville Parent Teacher Associations. Mrs. Symonds discussed the "Summer Round-Up Campaigns" sponsored by her organization. She has been an active supporter of the work of the Educational Committee in promoting understanding between various local Parent Teacher Association and respective County Medical Societies.

THE MONTH OF JANUARY PRESENTED NEW OPPORTUNITIES TO THE EDUCATIONAL COMMITTEE

31 POPULAR HEALTH TALKS were given during the month before Women's Clubs, Church Groups, Farmers' Institutes, Young Mothers' Clubs, Parent Teacher Associations, Y. M. C. A's. Among the subjects presented were—Religion and Health, Cancer, Periodic Health Examinations, Sex Hygiene, Child Psychology, Mental Hygiene, Communicable Diseases, Child Health, Early Detection and Correction of Defects, Animal Experimentation, Sheppard Towner Legislation.

35 RADIO TALKS WERE GIVEN FROM WGN and WJJD.

9 SCIENTIFIC PAPERS SCHEDULED:

John A. Wolfer, "Surgery," Warren County Medical Society.

William H. Holmes, "Modern Conceptions of Nephritis," Warren County Medical Society.

D. K. Rose, St. Louis, "Interpretation of Symptoms in Differential Diagnosis of Urinary Infection," Union County Medical Society.

Lindon Seed, "The Determination of Surgical Risk in Exophthalmic Goiter," Rock Island County Medical Society.

Wilber E. Post, "Nephritis," Will-Grundy County Medical Society.

George deTarnowsky, "Carcinoma of the Colon," La Salle County Medical Society.

Aaron Arkin, "Cardio Vascular Disease." La Salle County Medical Society.

Harry M. Hedge, "Some Common Diseases of the Skin," Will-Grundy County Medical Society.

John F. Carey, "Diseases of the Urinary Tract in Infants and Childhood," Iroquois County Medical Society.

FILMS: The Bureau of Mines, Pittsburgh, Pennsylvania, loaned the Educational Committee its new film on "Carbon Monoxide" to use in Chicago Factories during the month of January. The film was used by the Wilson Avenue Y. M. C. A. before nine groups of factory employees on the North Side.

PRESS SERVICE:

549 ARTICLES RELEASED TO NEWSPAPERS:

355 Regular Press Releases.

67 Newspapers, re meeting of La Salle County Medical Society.

97 Newspapers, re meeting Vermillion County Medical Society.

27 Community Newspapers, re meetings Branches of Chicago Medical Society.

3 Association of Commerce, re meetings Chicago Medical Society.

9 Health Educational Articles written:

Measles, a Highly Contagious Disease.
First Aid in Automobile Accidents.
Diabetes.
Pneumonia.
Discovering Tuberculosis in Time.
Nutritional Anemia of Childhood.
Stone Formation in the Urinary Tract.
Our Changing Food Habits.
Guard Against Influenza.

JEAN MCARTHUR, Secretary.

ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR THE STUDY OF GOITER.

The meeting of the American Association for the study of goiter will be held at Kansas City, Missouri, April 7, 1931. A program and details of the meeting can be procured by writing to Arnold Jackson, M. D., chairman of the Program Committee, Jackson Clinic, Madison, Wisconsin.

THE AMERICAN ASSOCIATION FOR THE STUDY OF GOITER OFFERS AN AWARD OF THREE HUNDRED DOLLARS

The American Association for the Study of Goiter again offers an award of three hundred dollars ($300.00) for the best essay based upon original research work on any phase of goiter presented at their annual meeting in Kansas City, Mo., April 7th, 8th

and 9th, 1931. It is hoped this offer will stimulate valuable research work, especially in regard to the basic cause of goiter.

Competing manuscripts must be in the hands of the Corresponding Secretary, J. R. Yung, M. D., Terre Haute, Indiana, not later than April 1, 1931, to permit the award committee sufficient time to examine all data. Manuscripts arriving after this date will be held for the next year or returned at the author's request.

First award of the 1930 annual meeting held in Seattle was given Dr. William F. Rienhoff, Jr., of Johns Hopkins University, Baltimore. Doctors O. P. Kimball of Cleveland, O.; E. P. and D. R. McCullagh, Cleveland, Clinic Foundation, Cleveland, O., and Robert P. Ball of the University of Louisville, received honorable mention.

ANNUAL MEETING OF THE AMERICAN COLLEGE OF PHYSICIANS

The Fifteenth Annual Clinical Session of the American College of Physicians will convene in Baltimore, Maryland, March 23-27, and in Washington, D. C., March 28, 1931. The organization holds this session in Baltimore through the cordial invitation of the Johns Hopkins University School of Medicine, the University of Maryland School of Medicine, the Medical and Chirurgical Faculty of the State of Maryland, the Baltimore City Medical Society and the further cooperative interest manifested by the various Baltimore hospitals and civic societies. Held in important medical centers, these Clinical Sessions constitute, perhaps, the most important postgraduate week in Internal Medicine each year. Those who attend the meeting will find ample in the way of clinical, laboratory, research and historical interest, well to repay them for the time spent in making the journey. Dr. Sydney R. Miller, of Baltimore, President of the American College of Physicians, has prepared the program for the General Scientific Sessions, while Dr. Maurice C. Pincoffs, General Chairman, also of Baltimore, has arranged the program of clinics, demonstrations, entertainment, etc.

As an added feature of the Clinical Session this year, an additional day, March 28, will be spent in Washington, D. C., where a special program of clinics and inspection tours has been arranged under the auspices of the Medical Departments of the U. S. Army, U. S. Navy, U. S. Public Health Service and Georgetown University. Dr. William Gerry Morgan is acting as Chairman of the Washington Committee, and is being assisted by Admiral Charles E. Riggs, Surgeon General of the Navy; General Merritte W. Ireland, Surgeon General of the Army; General Hugh S. Cumming, Surgeon General of the U. S. Public Health Service; Dr. William A. White, Director of the Government Hospital for the Insane; Dr. John A. Foote, Dean of the Medical Department of Georgetown University; Dr. Ales Hrdlicka, Director of the Department of Zoology of the National Museum; Dr. Roy Adams, Chief of the Medical Service at Mt. Alto Veterans' Hospital; Dr. W. H. Hough, President of the Medical Society of the District of Columbia; Dr. C. B. Conklin, Secretary of the Medical Society of the District of Columbia; Dr. George W. McCoy, Director of the U. S. Hygienic Laboratory, and Colonel Charles R. Reynolds, Commandant of the U. S. Army Field Hospital School of Carlisle Barracks.

The entire program of the Clinical Session is characterized by new subjects, new authors and wide geographic representation. It is significant that the Committees have attempted carefully to avoid repetition of subjects and authors, as has so often been the case in previous years, not only on the program of the American College of Physicians, but on the program of a great many medical organizations. On the General Scientific Programs there will be forty-five or fifty selected formal papers. Symposia on blood diseases, oxygen therapy, diseases of the liver, recent advances in endocrinology with particular reference to the newer work on supra-renal extracts, myocarditis, and several other subjects have been arranged. At Baltimore's many modern and excellently operated hospitals, clinics, ward-walks, laboratory demonstrations and the like will be held. Johns Hopkins Hospital and Medical School, under Dr. Alan M. Chesney, Dean, and a specially appointed Committee, will place at the disposal of the College all of its facilities and offer a program of great interest. Additional hospitals, such as the Union Memorial Hospital, St. Agnes Hospital, at which Dr. Joseph C. Bloodgood does so much of his work, the Municipal Hospitals, and several of the more private institutions, such as the Howard A. Kelly Hospital, noted particularly for its radium activities, and the Sheppard and Enoch Pratt Hospital, which is one of the most modern dealing with psychiatric problems, and many others will provide programs of clinics.

Hotel headquarters will be at the Lord Baltimore Hotel, while general headquarters, at which the registration of members, commercial exhibits and all general sessions will be held, will be The Alcazar, Cathedral and Madison streets, Baltimore. Transportation on the certificate plan of reduced fares will be available to all physicians and dependent members of their family from all parts of the United States and Canada. A special program of entertainment has been arranged for visiting ladies. The Convocation for the induction of new members, as Masters or Fellows, will be held on Wednesday evening, March 25, and the Annual Banquet will be held on Thursday evening, March 26. The Business Meeting, at which reports of administration and elections for the new year will take place, will be held during the forenoon of Thursday, March 26.

Mr. E. R. Loveland, 133-135 S. 36th Street, Philadelphia, is the Executive Secretary of the College, and it is to him that requests for further information or programs should be addressed.

Correspondence

THE ILLINOIS STATE MEDICAL SOCIETY OPPOSES THE PASSAGE OF THE JONES-COOPER MATERNITY BILL

The following is a copy of a telegram sent by the president of the Illinois State Medical Society to the chairman of the House Committee on Interstate and Foreign Commerce of the House of Representatives, Washington, D. C. The Bill is before this committee for public hearing and for recommendation:

NITE LETTER—JANUARY 17, 1931

Chairman of the House Committee on Interstate and Foreign Commerce, House Office Building, Washington, D. C.

Illinois State Medical Society opposes the passage of Cooper bill H. R. 12995 and asks that your committee consider this statement of studied opinion at its hearing of Tuesday, Twentieth. A Federal Health Coordinating Board is an unwarranted and unwise infringement upon the work of the Public Health Service of the Treasury Department. No need exists for the embarrasment of that service. We feel that the proposal emanates from a school of social thought which can never be successfully incorporated into our fraternal type and dual form of Government but which would presently result in social revolution if not checked. We believe that fifty-fifty subsidy of State Legislatures is a cruel and unusual infliction upon State Legislaturemen. We know that the Public Health Service already is cooperating with State agencies of health and we hope that it will never be forced to discriminate between rural health and urban health as is prescribed in section three. This Federal Service has never yet been forced to subsidize State Legislatures as is proposed in lines seventeen, nineteen of page three of the bill and we think such a proposed subsidy unwarranted and dangerous for this Government. To Section B of article 3 we object upon the ground that no bureau of an Economic department has right to infringe upon the activities of a federal health service or has presented any constitutional reason for the asking of any health fund appropriation. Confusion of health with economics is bad for health. On page six under Section five we read a prescribed acceptance of an unwise and discredited and expired and inadequate and communistic Sheppard-Towner Act of Nineteen Twenty One, which was repudiated for cause by the last Congress in Nineteen Twenty-nine. On page ten in Section ten we think we read calamity for all adequate health effort in that the only member of the prescribed board who is educated to know health considerations is ordered voiceless by the bill and we find such a provision to be thoroughly objectionable. That the same page and section should provide in lines thirteen to eighteen of page ten that the president may overrule encourages us to beg that this executive right be admitted in the first place and that the bill be relieved of its confusion by striking out all and everything except adequate and plentiful appropriation for the Public Health Service. We believe that Section thirteen on page eleven discriminates by omission against the Alaskan Territory and the Philippine protectorate, and we protest any such mistakenly social and loosely drawn proposal becoming a law in a fraternal United States.

WILLIAM D. CHAPMAN, President,
Illinois State Medical Society.

IN ILLINOIS OSTEOPATHS AND CHIROPRACTORS NOT AUTHORIZED TO ADMINISTER TOXIN, ANTITOXIN OR DO VACCINATION

STATE OF ILLINOIS
LAW DEPARTMENT
SPRINGFIELD

Oscar E. Carlstrom,
Attorney General

December 31, 1930.

FILE NO. 2993.
MEDICINE AND SURGERY:
Osteopaths and chiropractors not authorized to administer toxin-antitoxin or vaccination.

Andy Hall, M. D.,
Department of Public Health,
Springfield, Illinois.
Dear Sir:

I am in receipt of your letter of December 23rd, in which you state:

"In some parts of the State osteopaths are advertising that they will immunize children against diphtheria

with toxin-antitoxin furnished by the State Department of Public Health.

Enclosed find a facsimile of the license issued to chiropractors and osteopaths. What I would like to know is:

1. Whether persons to whom such licenses are issued are authorized to immunize children with toxin-antitoxin which requires an injection with a syringe?

2. Whether they are authorized to vaccinate against smallpox which requires a slight surgical procedure?

3. I would like to know if the Department of Public Health has a right to withhold issuing its biologics to persons practicing under a limited license such as is issued to osteopaths and chiropractors.

4. I would also like to know if persons holding licenses to treat human ailments without drugs or surgery, violate the law when they use biologics to prevent or cure disease and hold themselves out to the public that they will administer State biologics to immunize individuals.

5. I would also like to know if such practitioners subject themselves to prosecution and penalty for using such biologics, or hold themselves out as authorized to use such remedies. I would also like to know the nature of the penalty provided for by law."

You have submitted a copy of license issued by the Department of Registration to an osteopath under the provisions of the Illinois Medical Practice Act; also, a copy of a license issued to a chiropractor under the same Act. Both of these copies contain the provisions that the licensee—

"Is entitled to treat human ailments without the use of drugs or medicine and without operative surgery."

These licenses were issued under clause 2 of section 11 of the Medical Practice Act, found at section 11 of chapter 91, Smith-Hurd's Illinois Revised Statutes, 1929.

Toxin-antitoxin is defined by Gould's Medical Dictionary, 2nd Edition, Scott, as follows:

"A mixture of diphtheria toxin and its antitoxin; it is used as a prophylactic vaccination against diphtheria."

Antitoxin is defined by the same authority as follows—

"1. A counterpoison or antidote elaborated by the body to counteract the toxins of bacteria. According to some authorities, antitoxins are, like the toxins, bacterial products. Antitoxins are used in the treatment of certain infectious diseases and also to confer immunity against these diseases.

2. The commercial name for a fine white powder said to be a coal-tar product and used as an analgesic and antipyretic."

Both toxin and antitoxin are listed under the heading of biologicals in the United States Pharmacopoeia, which is a collection of formulas and methods for the preparation of drugs and a book of such formulas under such name is recognized as a standard. The same medical dictionary defines a drug as—

"A substance used as a medicine."

The United States Food and Drug Act of 1906 defines a drug as—

"Any medicine for external or internal use, or both."

From a consideration of these various definitions it appears to me that toxin-antitoxin is a drug or medicine and in answer to your first question I am, therefore, of the opinion that since an osteopath or chiropractor has a license to "treat human ailments without the use of drugs or medicine" he is not authorized under such license or under the statutes of this State, to immunize children with toxin-antitoxin which requires injection with a syringe.

Vaccination is the inoculation with the virus of cowpox in order to protect against smallpox. See: Gould's Medical Dictionary, 2nd Edition, Scott.

Vaccine virus is the morbic principle of cowpox, which acts as a preventive of smallpox, and is, of course, a different article from antitoxin. See: Words and Phrases, 1st Series, Vol. 8, page 7266.

Vaccine used in vaccination is a lymph from a cowpox vesicle. See: Gould's Medical Dictionary, 2nd Edition, Scott.

This substance, used in the vaccination against smallpox, is listed in the United States Pharmacopoeia under the title of "Biologicals" and by reason thereof the same appears to me to come within the meaning of "drug" or "medicine" within the meaning of these terms as above described and, therefore, the osteopath or chiropractor is not authorized to vaccinate against smallpox.

In considering your question number three, I call your attention to section 35 of chapter 111½, Smith-Hurd's Illinois Revised Statutes, 1929, which provides in part as follows:

"It shall be the duty of the Board of Health of the State of Illinois to appoint one agent in the county seat of each county in the state who shall have for distribution, as herein provided, diphtheria anti-toxin, certified to by the Board of Health of the State of Illinois, it being the duty of such agents to sell such anti-toxin at a fair and reasonable price. * * *"

I also direct your attention to clause 7 of paragraph 55 of the Civil Administrative Code of Illinois, found at section 55 of chapter 127,

Smith-Hurd's Illinois Revised Statutes, 1929, which provides that the Department of Public Health shall have power—

"To purchase and distribute free of charge to citizens of the State diphtheria antitoxin, typhoid vaccine, smallpox vaccine and other sera, vaccines and prophylactics such as are of recognized efficiency in the prevention and treatment of communicable diseases."

The two provisions of the statute last above quoted should be construed together under the well-known principle of statutory construction that,

"All consistent statutes which can stand together, though enacted at different dates, relative to the same subject, and hence briefly called statutes *in pari materia*, are treated prospectively and construed together as though they constituted one act." See People v. Cowen, 283 Ill. 308.

Since, under the Administrative Code, it is the duty of the Department of Public Health to purchase and distribute free of charge to citizens, antitoxin, etc., and since under the State Board of Health Act it is the duty of the Department of Health to appoint agents to sell antitoxin to all physicians and others applying for and needing the same, and since all these subjects come within the meaning of "biologicals" and are in fact biologicals, it appears to me that you are without any authority to withhold issuing your biologicals to osteopaths and chiropractors.

Our Supreme Court has defined "physician" in the following language:

"A physician is one versed in or practicing the art of medicine, and the term is not limited to the disciples of any particular school." *People* v. Siman, 278 Ill. 256.

"The term 'medicine' is not limited to substances supposed to possess curative or remedial properties, but has also the meaning of the healing art—the science of preserving health and treating disease for the purpose of cure—whether such treatment involves the use of medical substances or not. In common acceptance, anyone whose occupation is the treatment of diseases for the purpose of curing them is a physician, and this is the sense in which the term is used in the Medical Practice Act."

While the statute makes it your duty to deliver these biologicals to chiropractors and osteopaths when they have applied for and shown that they need the same, yet the mere fact that such osteopaths and chiropractors are entitled to receive such biologicals does not in itself authorize them in any manner to use such biologicals in the treatment of human ailments.

Under section 9 of the Medical Practice Act, found at section 9 of chapter 91, Smith-Hurd's Illinois Revised Statutes, 1929, one seeking to take an examination to become an osteopath or chiropractor is not required to take an examination in *materia medica* or therapeutics.

Materia medica is defined as follows:

"That branch of medical study which deals with drugs, their sources, preparation and uses." See Dorland's Medical Dictionary, 15th edition.

Therapeutics is defined by both Webster and Gould as:

"That branch of medical science which treats of the discovery and application of remedies for diseases."

The legislature of this State has not seen fit to require osteopaths and chiropractors to have any knowledge of *materia medica* or therapeutics, any any person taking an examination for and obtaining a license to practice osteopathy and chiropractics imposes upon himself the restrictions imposed by the statute.

Our Supreme Court, in the case of *People v. Witte,* 315 Ill., 282, at 287, says—

"The practitioner who possesses a restricted license voluntarily imposed upon himself the limitations under which he practices. If he wishes to practice medicine in all of its branches he is permitted by sections 12 and 12a (Cahill's Stat. 1923, p. 2215) to qualify himself for an unrestricted license precisely as others do."

And the same Court, in the case of *The People vs. Walder,* 317 Ill., 524, at 527, says—

"Any person who professes to practice any system of treating human ailments has to deal with those mysterious influences upon which health and life depend, and no person can claim the right to enter that profession who does not have a knowledge of the human body, its complicated parts and their relation to each other, and a knowledge of the effect upon the human body of substances which might cause sickness or destroy life."

A chiropractor or osteopath may have a thorough knowledge of *materia medica* and therapeutics so far as the statute or the license by the State department is concerned. So also, such physicians may have no knowledge of either of such branches of medical science and still be entitled to a license to treat human ailments without drugs. But since these two branches of medical science have to do with the effect of drugs as remedies, those physicians, not having the knowledge of such subject, required by the statute, would be presumed not to know how to apply such remedies. The presumption of law being that they do not know how to apply drugs as remedies, neither the osteopath nor the chiropractor has authority, under our statute or under

the license issued to either of them, to treat human ailments by the use of biologicals.

In answer to questions four and five I call your attention to section 26 of the Medical Practice Act, found at section 16-k of chapter 91, Smith Hurd's Illinois Revised Statutes, 1929, which provides—

"Any person who shall treat human ailments by the use of drugs, or medicines, or operative surgery and shall have only a license to treat human ailments without the use of drugs or medicines and without operative surgery, shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than one hundred nor more than five hundred dollars, or by confinement in the county jail not more than one year or by both such fine and imprisonment in the discretion of the court."

I further call your attention to section 32 of the Medical Practice Act, found at section 16q of chapter 91, Smith-Hurd's Illinois Revised Statutes, 1929, which provides —

"Any person who shall hold himself out to treat human ailments by any system or method of treatment other than that for which he holds a valid, existing license under the laws of this State, shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than one hundred dollars nor more than five hundred dollars, or by confinement in the county jail not more than one year, or by both such fine and imprisonment, in the discretion of the Court."

So, under the former section, if such osteopaths or chiropractors treat human ailments by the use of biologicals they violate the statute and under the latter section of the statute if they hold themselves out to treat human ailments by means of biologicals, they are likewise guilty.

Very truly yours,

(Signed) OSCAR E. CARLSTROM,

Attorney General.

DEROGATORY ARTICLES IN LAY JOURNALS PERTAINING TO MEDICAL SUBJECTS

Woman's Auxiliary
to the
Illinois State Medical Society

Mattoon, Ill., Jan. 26, 1931.

To the Editor:

In the February issue of the *Forum* appears an article purported to have been written by a woman who claims to be a graduate nurse. Her subject is "The Patient's Dilemma." Don't you think this story should be answered? We know of no one better qualified than yourself to suggest something to do about it.

Mrs. T. O. Freeman and the Doctor.

Note and Comment:

We will answer the story in the *Forum* as we have answered the hundreds of others of a similar character that have appeared in national magazines and newspapers during the last year. The task is becoming quite burdensome.

Month after month the newsstands, library tables of homes all over the land and of institutions, are filled with periodicals containing cleverly written articles totally and absolutely at variance with medicine and its work. In some instances this misrepresentation from phrase writers has reached the stage of fiction, bearing poisoned and invidious attack upon the self sacrificing science in the sugar coated story that appeals to the imagination and impresses the mind. One such appeared within the year of one of the five cent magazines claiming one of the largest weekly circulations in the world. In *Liberty* was published a story garbling what can, does, or might happen in a supposedly well regulated institution. This same magazine also run repeated criticisms of the faith, works and results of the medical profession that would not stand up before a fair jury of well informed persons.

Nor is this magazine alone in this tresspassing upon the rights of an ancient, honored and humanitarian profession.

Literary Digest; Ladies Home Journal; Good Housekeeping; Harper's Magazine, especially for November, 1930, and February, 1931; Delineator; Woman's Home Companion; The Forum; The Survey-Graphic; and scores of other outstanding periodicals all have published, especially within the past year, one or several articles that grossly misrepresent or falsely educate the public mind along questions where lay judgment is at once a peril and a menace.

WE HAVE NO WELL COORDINATED EFFORT IN DEALING WITH HUMAN PROBLEMS

Belleville, Ill., Jan. 20, 1931.

To the Editor: The enclosed newspaper article was written by one of our old family doctors and read before the last meeting of the St.

Clair County Medical Society (Belleville Branch).

Dr. G. G. Bock, former mayor of Smithton, is the author of the article. He writes for this paper from time to time and this particular article was in answer to the Child Welfare Conference in Washington.

G. C. OTRICH, M. D.

The following excerpts from Dr. Bock's newspaper article are worthy of reproduction. We quote:

The medical profession who are best qualified to cope with health and welfare problems, have not always let their light shine, but frequently kept it under a bushel from Hippocrates, Galen and the earlier Aesculapius, when the profession or practice of medicine was enshrouded in mysticism, which to this day still remains in the minds of the laity. While the medical profession was bending its energies in perfecting better methods in curing and coping with disease as it existed, other agencies, and especially members of various cults, societies, and organizations, were busy extracting large endowments from those free-lances of the commercial exploiters, who frequently are responsible or indirectly responsible for the crime, sickness, and other social disorders, which individuals and our body politic are suffering from today.

Legislatures and Congress are importuned to pass laws to enable the laity and various cults to solve the social and welfare problems according to the viewpoint of the various cults, societies and organizations. As a result, we have no well co-ordinated effort in dealing with human problems.

The medical profession is best qualified to cope with all problems pertaining to the health and the enlightenment of the laity or masses on all health questions. In our efforts to eradicate the ignorance, superstition and credulity that exists in regard to medicine, we have been slow to take the public into our confidence and explain health matters.

As a result of the profession's apathy, in regard to publicity of health matters, other organizations have succeeded in getting laws like the Sheppard-Towner bill and other medical legislature enacted, that should have received the sanction of the medical profession before such legislation became a law.

The medical profession should take the lead in regard to educating the people on all medical matters, and the dispelling of the many erroneous views held in regard to disease and the functions of the human body.

SCIENCE AND ART

The physician moves amid mystery. He practices an art based on many sciences. A man may know them all and be a less skilful healer than one who, knowing them less well, is master of the art to which they increasingly contribute.—*Dr. S. Weir Mitchell, in "Dr. North."*

PUBLIC HOSPITALS AND CONTROL OF LICENSED DOCTORS (A CORRECTION)

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC HEALTH
SPRINGFIELD

January 21, 1931.

To the Editor: In the January issue of the ILLINOIS MEDICAL JOURNAL, page 10, you have an article under the heading *"The Attorney General of Illinois Holds That Public Hospitals in Illinois Cannot Exclude Any Doctor Licensed by the State,"* and in the article you say, "According to the Associated Press Reports December 29, the drugless practitioners cannot be barred from hospitals."

As evidence that the report sent out by the Associated Press was incorrect and misleading I am enclosing a copy of the Attorney General's opinion.

ANDY HALL, M. D.

The following is the opinion:

(COPY)
STATE OF ILLINOIS
LAW DEPARTMENT
SPRINGFIELD

December 18, 1930.

FILE NO. 2973.
MEDICINE AND SURGERY.
Power of municipal hospital to fix standards of qualifications for those who practice in such hospital.
Andy Hall, M. D.,
Department of Public Health,
Springfield, Illinois.
Dear Sir:

I am in receipt of your letter of December 11th, in which you advise that the city of Decatur has recently constructed a hospital for contagious diseases, such as smallpox, diphtheria, measles, scarlet fever, meningitis, infantile paralysis and other communicable diseases.

You ask whether, under the laws of this State, the Board of Directors of that hospital have authority to fix a standard of qualifications for those who practice in such hospital.

In reply I direct your attention to section 11 of an Act entitled:

"An Act to revise the law in relation to establishing and maintaining public hospitals in cities of less than 100,000 inhabitants."

found at section 175 of chapter 23, Smith-Hurd's Illinois Revised Statutes, 1929, and which provides as follows:

"All physicians who are recognized as legal practitioners by the State Board of Health of Illinois shall have equal privileges in treating patients in said hospital."

Under the statute it becomes important to determine the meaning of "legal practitioner." Under section 11

of the Medical Practice Act, found at section 11 of chapter 91, Smith-Hurd's Illinois Revised Statutes, 1929, it is provided that the following kind of licenses shall be issued:

"1. To practice medicine in all of its branches, to applicants passing examinations therefor;

"2. To treat human ailments without the use of drugs or medicines and without operative surgery, to applicants passing examinations therefor. * * *"

Our Appellate Court, in the case of *People v. Barnett,* 240 Ill. App. 357, at page 361, says:

"'The General Assembly, in framing the Medical Practice Act, was confronted by the necessity of applying its provisions to the schools of medicine or medical practice now existing and to those which might arise from time to time. It was impossible to formulate a statute with particular reference to each. A plan of regulation was provided in a single, comprehensive enactment applicable alike to all schools, present and future. The plan divides licenses (Cahill's Stat. 1923, ch. 91, par. 11) so far as physicians are concerned, into two classes, one of which confers the right to practice medicine in all of its branches, and the other to treat human ailments without the use of drugs or medicines and without operative surgery, the licensee under such a license to be restricted by its terms to the practice of the system or method which he specifically designated in his application as the one he would undertake to practice.'

"The Supreme Court has frequently held that the term 'practice of medicine' is not confined alone to those practitioners who may use drugs, etc. In *People v. Siman,* 278 Ill. 257, the court at page 257 says:

"The term 'medicine' is not limited to substances supposed to possess curative or remedial properties, but has also the meaning of the healing art,—the science of preserving health and treating disease for the purpose of cure,—whether such treatment involves the use of medical substances or not. In common acceptance, anyone whose occupation is the treatment of diseases for the purpose of curing them is a physician, and this is the sense in which the term is used in the Medical Practice Act."

In view of the provisions of the above statute and the language used by Judge Boggs of the Appellate Court in the fourth district, I am of the opinion that "legal practitioners" includes all persons who have been licensed to practice medicine, either in all its branches or to treat human ailments without the use of drugs or medicine and without operative surgery. "The Board of Directors of such hospital would have no authority, under the statute, to pass any rules or regulations preventing all legal practitioners from having equal privileges and treating patients in such hospital."

The term "physician" includes all persons whose occupation is the treatment of diseases for the purpose of curing them, whether it be with drugs or without drugs. See *People v. Barnett,* supra. And, the section of the hospital act to which I first call your attention provides that all such physicians who are recognized as legal practitioners by the State Board of Health shall have equal privileges in treating patients in said hospital.

The medical practice act provides for an examination to be passed by those desiring to practice medicine and the person successfully passing such examination and receiving a license as such cannot be subjected to further examinations or qualifications by any hospital board.

The Department of Registration and Education has the power and authority to determine and fix a standard of qualifications for those practicing medicine and such power is not delegated to public hospitals.

I am returning to you herewith the correspondence submitted by you with your letter.

(Signed) OSCAR E. CARLSTROM,
Attorney General.

FIRST BATHTUB INSTALLED IN AMERICA IN 1842

Although the ancient Romans and Greeks were well aware of the value of bathing not only for cleanliness, but for health as well, it is a peculiar fact that following the fall of the Roman empire down until 1842 bathtubs and regular bathing were shrouded in a whole galaxy of bugaboos, and it was a brave, nay, foolhardy, person who "flew in the face of providence" and took a bath!

In 1842 Adam Thompson installed the first bathtub in America. It was made of mahogany, lined with lead, and weighed a ton. An what a storm arose! Physicians condemned it as dangerous to health. Preachers stormed against it from the pulpit, claiming that bathing would tend to make mankind extravagant and that they would lose their morality.

The legislators, swayed by public opinion, joined in the war and placed an exorbitant tax on bathtubs as their bit in putting down the practice.

But nothing happened to Thompson and the custom spread rapidly until by 1860 every really first-class hotel had its two or three public baths. Since that time there has been a rapid development in the manufacture of bathtubs and bathing facilities, until today the range of styles in bathtubs has reached an almost unlimited choice of styles.

With this development in bathtub construction has come that of shower bath development. Recognized as a most healthful, as well as most enjoyable, method of cleansing the body, the development of the shower bath has been retarded by the problem of leakage and the high cost of installation.

TOWARD HAPPINESS

Whenever you feel less happy than usual, eat less, sleep longer, exercise more, and find out whether something is worrying you. If this doesn't help, see a doctor.—*Walter B. Pitkin.*

Original Articles

SOME DEVELOPMENTS WHICH HAVE AFFECTED PROGRESS IN PEDIATRICS*

GEORGE EDWIN BAXTER, M. D.
CHICAGO

It is important for the General Practitioner to be pediatric minded. This sentence is paraphrased from the title of an address delivered by Dr. William A. Pusey before the Institute of Medicine, entitled "The importance of being historically minded." The choice of the subject for this paper was made because experience has taught that the average general practitioner has not, at least enthusiastically, interested himself in advancing his knowledge of the progress which has been made, in the care and treatment of children. There is too much disposition to be content with obsolete methods or to be guided in feeding by the clever detail man of one or many baby food manufacturers. It is important for the general practitioner to familiarize himself with the fundamentals in the care of infants and children; once these fundamentals are acquired he will learn to be pediatric-minded.

The management of infants in sickness or health calls for special study and perfection of skill, the same as is demanded of any of the other departments of medicine. The attitude of some physicians was well expressed to me some years ago by a general practitioner, with a very considerable surgical ability, when he said: "The care of babies and children requires no special skill, because if you let them alone, they all get well." Such a statement can well be challenged because it is obviously untrue. Even though we can not actually cure many diseases, we can greatly help the infant or child that is sick or well.

There is scarcely a department of medicine which does not in some manner, either directly or indirectly, concern itself with the management of children. Pediatrics may be defined as the general practice among infants and children, with an age limit. The physician who practices among children finds it necessary to familiarize himself with all sorts and conditions as manifested in health and disease, particularly as those conditions are altered or varied during childhood. He is indeed a general practitioner among children.

Certain factors enter into child life which must always be considered. Growth is a constant factor. It is impossible to evaluate disease or health in children without a proper understanding of growth and its varied effects. Certain infectious and contagious diseases are found to be more prevalent during childhood. These diseases have a decided temporary, if not permanent, effect upon growth.

Vitamins. The discovery of vitamins has clarified to some extent, our knowledge of the value of foods. It was found that isolated food factors, such as protein, carbohydrates, fats and minerals, when fed to experimental animals failed to cause growth until milk in small quantities was given. It was thus shown that there is a something to be found in milk which is necessary for growth and is not present in the synthetic food which is made of fats, protetin and carbohydrates in amounts sufficient to produce the energy requirements of the organism. No one has isolated any of the vitamins. Of course the public has pounced upon vitamins and demanded that all diets shall be expressed in terms of vitamins. Food or chemical manufacturers have been quick to commercialize this substance. New vitamins are being discovered. The interesting fact remains, that all animals have been choosing and eating vitamins since the beginning of animal life and practically the choice has been made by self selection.

The knowledge of vitamins and their importance in the growth of animals has stimulated greater care in the selection of diet for those infants and children unable to make their own choice. Some very interesting and instructive experiments have been made along the line of self-selection of foods by young infants. The experiments, still incomplete, at least give us courage for more liberal choice of foods for feeding infants. The experiments are not based upon scientific selection of foods but upon the natural selection by the infant based upon his needs as interpreted by himself. The known vitamins are:

Fat soluble A, found in milk and fats necessary for growth; its absence may produce xerophalmia.

Water soluble B, found in covering of cereal

*Read before Vermilion County Medical Society, March 4, 1930.

grains; anti neuritic, prevents beriberi or polyneuritis.

Vitamin C. Antiscorbutic found in citrus fruit juices, tomato juice and potato.

Vitamin D. Antirachitic found in cod liver oil.

Vitamin E. Is the reproductive and does not concern us now.

Convulsions. The pronounced instability of the nervous system requires attention and consideration. This instability is evidenced in both disease and in health. The modern child is the object lesson of many theories and varied practices to control his nervous reactions; to develop his mentality and to co-ordinate his adjustments to his environment. Convulsions are a common occurrence in infants; the treatment is urgent and immediate. The cause of the convulsion requires careful examination and study of the patient. The unstable nervous system is present to a greater or less degree in all infants, but the precipitating cause of the convulsion is by no means always the same. The difference in susceptibility of infants is explained usually by the presence of a spasmophilic diathesis, resulting from a deficiency of calcium and phosphorous. Constipation if present, is an incident, not a cause. The intestinal tract has practically no causative relation to convulsions. The custom of administering cathartics and enematas during a seizure has its greatest usefulness in the psychological effect it produces upon the family rather than the relief it gives to the infant.

Child Management. There has been an abundance of literature and propaganda circulated, calculated to aid the mother in child management. Much of it is good, some of it is vicious, and some misleading and confusing. It is the duty of the general practitioner and pediatrician to lead and guide the parents in the proper child management. Parents are eager for instruction and guidance and would welcome that from their doctor. The physician must learn how to properly direct parents. Child hygiene and management is a problem that is constantly with parents. They will seek advice where they can get the best. It is the function of the doctor to give it. He can not be content in giving adverse criticism of public propaganda, but he must qualify himself to give constructive advice. He is, or should be, the natural counselor and adviser and if he fails in this function he is missing a real opportunity to serve his patients.

Artificial Feeding. The most important and the most exclusive pediatric factor is the artificial feeding of infants. Breast feeding requires study and teaching from the standpoint of its technic. It should not be necessary to teach its importance and desirability. The artificial feeding of babies is strictly a special department of medicine. It calls for special knowledge and special training. Just because some babies thrive on any kind of food given to them, whether from a can or spoon, is by no means proof that they will all thrive in that manner. A high percentage even of breast babies require supervision of their nutrition and growth. The feeding of artificial foods to babies should always be done under the careful supervision of the physician.

The progress in our knowledge of infant feeding during the past 25 years has been great and almost romantic. About the time that pediatrics made claim for recognition as a specialty of medicine, there arose (as a result of our teaching unfortunately) a popular desire on the part of mothers to feed their babies the bottle and thus avoid the confinement and discomforts incident to breast feeding. This desire arose as a result of the teaching by physicians that babies could be fed as well artificially as naturally. Milk modification by the percentage method created a false security in the minds of physicians and later in the minds of the mothers: that cow's milk so modified was the same as human milk. This reasoning was based upon the fallacy that by modifying cow's milk so that the percentage of fat, protein and carbohydrate would equal that of human milk, the infant would then be getting the same quality of food as breast milk. The search for scientific knowledge of foods and the intensive study of infants developed the idea that infants could be fed scientifically; that human milk was not necessary and indeed not always desirable.[4] Gradually, the *art* of feeding infants either by breast or bottle, was lost. Finding this lost art, a return to common sense and a recognition of the limitation of scientific methods in artificial feeding, have been outstanding developments in the progress of pediatrics.

Great stress was laid upon the necessity of making identical, the percentage of fat, protein and carbohydrate in the cow's milk formula with that of human milk. Little thought was given

to the character of the other ingredients of milk, such as the minerals. Later studies showed that cow's milk is richer in casein than is human milk; also, that the soluble protein in human milk is found in greater quantities and is more easily digested. Cow's milk formulas made up according to percentages were by no means satisfactory in infant feeding. Difficulties arose and efforts were put forth to find out why the babies could not be fed on a formula containing identical percentages of fats, protein and carbohydrates as are found in human milk.

All curdled undigested stools were interpreted as due to casein indigestion. This interpretation led to the use of the whey cream mixtures. Cow's milk was treated with a coagulator such as rennet; the coagulated casein was strained out and only the whey, which contained all soluble proteins, lactose and minerals, was used. Cream in definite percentage was added; lactose was added, thus giving a mixture containing the soluble protein with fats and carbohydrates in percentages identical with human milk. Casein, the supposed great offender in the infant's digestion of cow's milk, was eliminated. The result should have been a perfect imitation of human milk. The theory and results failed to reckon with two important factors. First, that the newly modified milk was still cow's milk, devoid of certain undetermined qualities, which are present in the milk of a species, and which make that milk especially adapted for the growth of the young of that particular species. The second fact was, the infant. Some thrived on whey cream mixtures, as some will thrive on almost any kind of food in spite of its qualities or means of preparation. Many, however, did not thrive and the juggling of the percentages did not make any difference.

When it was quite satisfactorily proven that the cream of cow's milk was poorly tolerated in many infants, then studies were directed to determine the cause. It was found that there is a distinct physical difference in the fats of human and cow's milk. Cow's milk fat globules are much larger and more difficult to break up and emulsify. Human milk fat globules are much smaller and emulisfy more easily and consequently digest more readily. Some enthusiastic and ambitious investigators tried to make a synthetic milk. This was done in the main by selecting vegetable and animal fats which could be homogenized and produce a fat more nearly resembling human milk fat in its physical composition. Attempts were then made to have the mineral salt composition in the artificial formulas the same as that found in human milk. The object of the attempts of these investigators was to produce a human milk from the laboratory. Few of these synthetic milks stood the clinical test. All synthetic milks, no matter how carefully and chemically prepared, have the weakness that they are not human milks. Some have merit. It is difficult for the manufacturer of any kind of baby food to recognize the limitations of his product in the feeding of babies. Oliver Wendell Holmes, almost a century ago, defined the limitations of synthetic milks when he said: "A pair of substantial mammary glands have the advantage over the two hemispheres of the most learned professor's brain in the art of concocting a nutritious fluid for infants."

Another step in the progress of infant feeding was developed by Finkelstein & Meyer of Berlin. They were studying the group of infants afflicted with a diarrheal condition similar to that described in our text-books as cholera infantum and which they described under the named of acute alimentary intoxication. They worked upon the theory that the whey of cow's milk was toxic to certain infants. They believed the sugar or lactose found in the whey was not well tolerated. For many years buttermilk, which was fat free, had been fed to sick infants, especially infants with diarrhea and had been remarkably well tolerated. Also it had been shown by observers and clinicians that fat free sweet milk was much more easily digested than milk with cream on it. Having the background of the many different methods of making cow's milk formulas, none of which were entirely successful; also the knowledge that casein as fed in buttermilk and fat free milk was well tolerated by both sick and well infants; they were able to demonstrate the practicability of their theory that the whey of cow's milk was not only not well tolerated by infants with diarrhea, but actually made them worse. Therefore, they added the coagulator to cow's milk and strained off the whey; but they threw away the whey and retained the casein curd—this same curd which had previously been discarded because it was believed to be the chief offender in producing digestive disturbances. The casein curd was saved and re-dissolved in water

and buttermilk. The result is the protein milk which has stood the clinical tests and has such a wide field of usefulness in infant feeding.

Many a rough road has been traveled in ignorance by the path finder and pioneer. At his journey's end he is oftentimes surprised to find that there was a much shorter and easier route, had he but known. So in medicine, some of our most valuable discoveries have been made after years of study and research, and in the end to find a comparatively simple result which might have been attained by a much shorter and less laborious route, had the necessary knowledge been at hand.

The history of infant feeding certainly illustrates this fact. Through many years, at least over a quarter of a century, there was a great deal of research and clinical observation; heated discussions in medical meetings. Staunch supporters of this or that method of infant feeding, opposition to what seemed like established facts developed, with resulting new methods, until finally a complete revolution against all methods and the acceptance of a method, practiced as early as about 1750, when Von Rosenstein used simple dilutions of cow's milk in infant feeding. He advised cow's or goat's milk diluted with water and with the addition of sugar. He used barley water and oatmeal water and suggested the use of whole undiluted cow's milk at six months of age. This is practically the basis of the present day method of feeding infants.

THE ADAPTATION OF FOOD TO THE INFANT

This is an underlying principle in feeding all babies. All methods fail with some babies. All foods fail with some babies. That is why you can not successfully feed all babies Mellin's food, or S. M. A., or Dextri-Maltose, or protein milk or any other food. The difficulty has always been to find a food or combinations of food with milk which would produce satisfactory results with all infants. The most methods or foods are based upon the fallacy that all infants react the same to methods of feeding, or have the same tolerance for certain foods. The attempt has been made to standardize babies as well as foods. To adapt all babies to foods or methods instead of adapting a food suitable for the particular infant.

Success in feeding babies whether from breast or more especially from bottle food is attained only by individualization. This fact makes it difficult to teach or practice a single method of feeding. Practice and experience have taught the use of numerous methods and foods, none of which are adaptable to all babies. The result is, that each individual infant must be studied and a food adopted for his needs and tolerance. The physician must acquaint himself with all available foodstuffs, their values and digestibility. He must learn the various reactions which infants may have toward foodstuffs, the high and low points of tolerance as evidenced by gains in weight, appetite, vomiting, character and frequency of stools. Clinical experience as related earlier in this paper has shown the fallacies of improper interpretations and errors in reading the results of food disturbances. It has been shown that originally it was believed that casein in milk was always the factor to produce indigestion. Now we know that casein is not only easily digested but is a therapeutic agent in some conditions. Cow's milk fat was supposed to be easily digested by even new-borns, now it is known that the curds formerly thought to be protein curds are fat curds.

Milk sugar was believed to be the only sugar to use in a bottle formula, because that is the kind of sugar found in both breast and cow's milk. Large clinical experience and experimental evidence have shown that cane sugar and preparations with part malt sugar are just as well tolerated in most cases and in some instances much more easily digested.

Various cereal gruels when added to milk formulas have been found to act in two ways: first, by preventing the formation of such large curds in the stomach; and second, by adding a definite food value to the formula. Here again, the individual tolerance is to be considered. Some infants tolerate best, wheat, some oats, some barley, some rye, etc. This fact can only be determined by carefully noting the infant's reactions when any particular cereal is given. It is true that many babies have a good tolerance for one or many cereals but too often the physician does not keep close enough observation to know if the particular infant in hand is indeed thriving properly.

In infant feeding one must also consider the seasons of the year. Tolerance for food in a single infant may vary with the season. Summer produces certain disturbances not to be found in the winter and again in the winter months

one finds conditions which frequently interfere materially with the infant's nutritional development. Feeding the well baby does not call for the factors to contend with that are found in feeding a sick infant.

SICK INFANTS

Progress in pediatrics has shown some very remarkable fallacies formerly practiced and still being practiced in the feeding and care of sick infants. Twenty-five years ago the practical teaching of pediatrics in medical schools was to give all sick infants 1/10 grain of calomel every one-fourth, one-half or one hour for 10 doses and follow with a dose of castor oil. Pediatrics was in its infancy and little else was known by the teachers. It was believed then and by some even now, that the intestinal tract was responsible for most of the infant's illnesses and had to be treated in all illnesses. Development in our knowledge of the sick infant has almost completely revolutionized his care as has been the change in our knowledge and practice of infant feeding.

It is now known that the intestinal tract is seldom the actual cause of illnesses. It is commonly affected secondarily and rarely requires any direct treatment in the form of catharsis.

Respiratory Tract Infections. There is no one condition as frequently observed in infancy which is a cause of sickness as the acute infections of the respiratory tract. The respiratory tract includes the nose, ear, the accessory sinuses and cavities, the pharynx including tonsils; the larynx, trachea, upper bronchi and finally the smaller bronchi and lung tissues.

It would be only a most careless observer who would fail to recognize infections of the lower respiratory tract such as pneumonia or various types of bronchitis. The diagnosis of the localization of infections in the upper respiratory tract is more often overlooked, because of the failure of the physician to examine the infant. The common cold is responsible for a very high percentage of infant illnesses. This may be nasal, post nasal, ear, pharynx, larynx, or cervical adenitis with any or many complications. Many of these conditions escape recognition only because the physician's sin is one of omission instead of commission. He fails to examine, and unless he knows that these conditions frequently exist, he may fail to recognize them even though he examine. Throat infections are extremely common in infants. The physical evidence may be slight, such as a redness of the uvula, or a redness and slight swelling which resembles small papules to be found at the junction of the base of the uvula with the anterior pillars of the pharynx. These swellings may be single or multiple; they may be quite red or only faintly red. The area of redness may be limited to the swollen portion or may extend to varying degrees, sometimes even involving the whole soft palate and anterior pillars.

Throat infections make the infant sick. He has fever, usually vomits, has loss of appetite. The course, uncomplicated, is usually two or three days and sometimes is followed by a measles-like eruption, variously described as toxic erythema or erythema subitum. The eruption never appears until after the temperature is normal and is frequently erroneously diagnosed as measles.

These respiratory tract infections, especially the throat infection just described, account for the most of the infant's disturbances that were formerly attributed to teething. Eruption of teeth is a normal physiological process and seldom causes anything more than minor discomforts, restlessness, slight anorexia and fretfulness. When fever is present in an infant, the cause is found to be elsewhere than in the gums if a careful and thorough search is made. It is poor practice to ever accept the diagnosis of teething as the cause of an infant's illness unless a careful examination has failed to reveal any other explanation.

Respiratory tract infections are not new in infant life—it is not a modern disease. It is only that our knowledge of its relationship to infant welfare, is new. Many illnesses formerly attributed to intestinal derangements, functional or infectious, are now known to be the result of infections outside of the intestinal tract, so-called par-enteral infections. These facts should direct our line of treatment for the condition which exists and not blindly attack the intestinal tract.

Constipation and Cathartics. Cathartics have been used too freely in treating the sick infant. Giving a cathartic to the sick infant has and still constitutes the first and main attack directed by many physicians. This method of treatment was based upon the theory that the intestinal tract was the source or cause of the illness. It is the erroneous belief of many physicians that

a diagnosis of intestinal disturbance is justified in all sick infants.

Constipation has been, and still is, believed by many people and even by many doctors, a serious condition. There are many who think that the life of an individual is threatened if an evacuation from the bowels is not produced during each 24 hours. There are others who believe that serious impairment of health will result if the daily defecation does not occur. There are still others who can name scores of symptoms, discomforts and disturbances which they believe are the result of constipation. The bowel of the poor infant has been the main and only organ about which information has been sought in the history and the sole point of attack in treatment. With no examination, or only a superficial investigation, the physician calls for a stool, makes minute search for small strings of mucous, which if found is pointed to with a finality, that *that* explains the entire sickness. If perchance a cathartic, especially castor oil, has been given, then the green mucous stool tells the story, when the look of contentment is read on the doctor's face, that the diagnosis of "intestinal infection" is too clear to even discuss. This is a wrong interpretation of a normal condition.

Constipation is a normal condition in all bottle fed babies and not a sickness. Fever does not result from uncomplicated constipation. Convulsions do not result from constipation. Infants thrive, gain in weight and are comfortable except during the act of defecation when considerable discomfort or even pain is experienced in the stretching of the anal mucous membrane as the hard stool is being passed; sometimes even streaked with red blood. Constipation is best controlled by teaching the anxious family that nothing serious ever develops from constipation. Otherwise the treatment is practically dietetic, not by cathartics or purges.

In almost all febrile conditions in infancy, digestion is inhibited to a greater or less degree. The indigestion usually produces an attack of vomiting. The stomach is thus emptied early and thereby prevents the undigested food from reaching the intestinal tract. Occasionally a mild laxative is indicated or an enema, but seldom a drastic purge.

Dehydration. Another important development in the progress of pediatrics was the recognition of dehydration in infants. Water loss is serious to the infant. Water balance must be maintained. Not a few infants in sickness have developed a water unbalance because of drastic and repeated purges and decreased intake. A severe degree of dehydration is always serious and one which calls for immediate relief if the infant's life is to be saved. The picture of an infant starving for water should be familiar to all, and when that condition is known and recognized then it can be treated; or, it may be prevented. Diagnoses of pneumonia, intestinal intoxication or infection, meningitis, etc., have been made in infants who have no pathology but whose tissues are dried out. He has become so toxic that he is almost unconscious, unable to show any reaction to light, or touch; tongue is dry, throat dry, eyes sunken, tissue turgor lost. Even if there is an underlying pathological condition, the indication for treatment is evident. Give water in quantity sufficient for the infant's need. There is no single remedy as generally important in the care of sick infants as the free and intelligent use of water. The intelligent use consists in the physician giving clear and specific directions as to the quantity of water to ge given, the method of giving, the frequency, and the insistence that the mother or nurse should pay no attention to the infant's protest against taking it. Prevention of dehydration in a sick infant materially aids that infant in his fight against the infection and oftentimes will prevent a wrong diagnosis.

When the physician recognizes the necessity of any line of treatment, he will have very little trouble in convincing a mother of that necessity. A mother will usually carry out any instruction provided she is shown that such a procedure will either save her baby's life or will prevent the development of some serious condition.

PHYSICAL EXAMINATION

Physicians who have attended medical schools during the past ten or twenty years have been taught the necessity of thorough examination of the patient in order to make a diagnosis. The tremendous developments in the progress of laboratory technic and findings, have given some wonderful facts to help in our diagnosis. So popular has become the demand by physicians and patient for all these tests, that the recent graduates and even many of the older graduates

have grown to lean upon the laboratory in all its departments to furnish the diagnosis. They have lost sight of and overlooked the greatest aid of all, namely: the physical examination of the patient. A thorough knowledge and acquaintance with the patient's physical condition as revealed to the eye, the hand and the ear can never be entirely replaced by any or all of the finest laboratory technic. This statement is made, not with the idea of deprecating the value of laboratory findings as an aid in a diagnosis, but with the idea of stressing the importance of learning all that can be found out about the patient by intelligent use of our senses and then supplementing this knowledge by the laboratory findings, if necessary. It has been truthfully said that medicine is not and never can be an exact science. The reason seems obvious. The human body is not a perfect mathematical machine. There is too much individual variation; too much influence exerted by the mind and emotions in the make-up of bodily functions, influences which are not as yet capable of scientific measurement or control.

Make a thorough physical examination first and one is often surprised how much he can learn about his patient. The examination can be conducted with the infant or child without the fear of immodesty. Physicians should get the habit of having the babies stripped for each examination. Inspection is one of the most important of the physical methods of examination, other methods are supplementary. It is inconceivable that a blind physician would attempt the practice of medicine among babies and children.

In conclusion, the following should be emphasized in pediatric practice.

1. The infant or child is not a small adult.
2. Growth is a necessary part of child life and must be reckoned with in the management of the sick or well child.
3. Infant feeding is strictly a pediatric problem, demanding a most complete knowledge of all factors and available foods necessary to produce growth and health; also demanding study of the individual infant in order to adapt to him a food suitable for his needs.
4. The recognition of the various localization of infections which are so frequent in infant and child life. A careful study of the influence the infections have upon, not only the health but the growth of the child.
5. The proper evaluation of teething in infant life; especially to recognize the limitations of teething in its influence upon the health of the infant.
6. A clear understanding of the clinical knowledge of the functions of the infant or child's intestinal tract, and the alteration of these functions in disease so that the cause of infant sickness shall be placed where it belongs and not blindly ascribed to the intestinal tract.
7. If the physician would know his infant patient, a thorough physical examination must be made in order to learn truly what the trouble is and then to intelligently proceed to the management of the patient.

COMMON MISTAKES IN THE DIAGNOSIS AND TREATMENT OF GOITER*

ARNOLD S. JACKSON, M. D.,
Jackson Clinic
MADISON, WISCONSIN

Why is it that frank cases of hyperthyroidism are so often treated for heart disease even by competent physicians? How many cases of neurasthenia are subjected to surgery every year in this country because of a failure to appreciate a true disturbance of the thyroid gland? In what percentage of cases of exophthalmic goiter submitted to surgery is the risk of operation tremendously increased because of the failure of a prolonged medical regime?

In attempting to analyze some of the records of patients passing through our thyroid clinic in recent years, these are a few of the problems that I thought might be of interest to you. It is not my intention in this discussion to outline the cardinal points in differentiating the various types of goiter or to elucidate on a classification. The literature contains ample records of these subjects and merely to clarify this paper, goiter has been divided into the non-toxic and the toxic varieties. Colloid and non-toxic adenomatous goiter are placed in the former; exophthalmic and toxic adenoma in the latter.

If there is any panacea for goiter I have not been able to find it after ten years' intensive study of the subject; neither has any one else in the world so far as I am able to ascertain. I have reports and records of goiter in Norway,

*Read before the meeting of the Fulton County Medical Society, Canton, Illinois, October 22, 1930.

Switzerland and China, in the African negro, in the Hindus of India and the Indians of America. An adenomatous goiter is an adenoma whether in Africa, Europe, Canton, China, or Canton, Illinois. The same is true of an exophthalmic goiter, as the incidence of hyperthyroidism varies in different localities particularly with regard to adenomatous goiter. But the point I wish to make is, if Colonel McCarrison discovers a cure for goiter in India, it will not be long before you and I will hear about it, and be able to cure our goiter cases with the same remedy. By conservative estimate I should say there are at least 200 "sure cures" for goiter in this country ranging from harmless strings of magnetic beads to dangerous solutions of iodine, and it should be one of the prime objectives of all physicians interested in goiter to enlighten the laity with regard to the absurdity as well as the danger of these patent remedies. It might be well to add that there are still a few members of the medical profession who feel that they possess some cure for goiter unknown to their less fortunate colleagues.

Suppose a young woman, aged twenty, comes to your office because she has been told that a goiter is the cause of her nervousness and pounding heart; is an exophthalmic goiter the first thought to enter your mind? If so, it is your problem to rule out this possibility. You can at once disregard a toxic adenoma because such a condition is almost unheard of at this age. The patient states that she is easily upset, tends to cry without much cause, feels that her neck is tight, that at times it seems to choke and pain her. She cannot sleep, has a poor appetite, her heart pounds especially after meals, she has frequent headaches, is constipated, tired all the time, and unable to gain weight. On examination, slight tremor of the hands is noted, a symmetrical enlargement of the thyroid gland, prominent eyes, a pulse rate of 90, systolic blood pressure of 120 and diastolic of 84. She may even volunteer the information that because of a basal metabolic rate of 25 per cent. she has recently been advised to have a thyroidectomy. Has she or has she not an exophthalmic goiter? You are likely to say at once she has not. Be careful not to say this every time as you may be mistaken. Occasionally such an innocent looking individual has been taking iodine for several weeks, a fact she may neglect to mention or you to ask. I have seen such cases in which even the metabolic rate was temporarily within normal limits and in which incipient hyperthyroidism was almost overlooked.

If, however, this young woman has not taken iodine she probably has a mild case of neurasthenia (or whatever you wish to call it) and not exophthalmic goiter. Patients with exophthalmic goiter seldom complain of tightness or choking or pain in the neck, almost all other nervous women do. In fact, after some busy days I wonder if all women do not suffer this symptom under a nervous strain. In no other condition except diabetes mellitus do patients have a good appetite and yet lose weight, and the true case of Basedow's disease is unique in the extent of weight loss in spite of a ravenous appetite. Not all of the latter, of course, are excessively hungry and this symptom even changes to anorexia and nausea as a crisis approaches, but it is unusual to see a neurasthenic person with a ravenous appetite and still losing weight. The latter complains more of her heart palpatating, especially after meals. There is a true pounding of the heart in exophthalmic goiter so that even the bed may transmit the sound from wife to husband. Headache and constipation are rather frequent complaints of the neurotic person and are seldom mentioned by patients with hyperthyroidism. On the contrary, there is a tendency toward diarrhea in the latter which, in the days before Lugol's solution came into use, often proved a serious complication.

There may be no visible difference in the appearance of the neck in a mildly nervous girl with a colloid goiter and one who has a truly hyperthyroid condition. The neck of the patient with hyperthyroidism, however, usually appears to throb and pulsate and in about 50 per cent of the early cases will transmit a thrill to the palpating fingers. Likewise, a bruit may be heard. In exophthalmic goiter a stare may be present that is never seen in the neurotic girl, although the latter may have large prominent eyes. It should be remembered that true exophthalmos is absent in one-half the cases of exophthalmic goiter within the first three months of onset. The pulse rate may be misleading, but as a rule is higher in toxic goiter. The blood pressure readings are of considerable importance. If the systolic pressure is normal or slightly elevated but the diastolic pressure is considerably below

normal, the possibility of a toxic goiter must be strongly considered. Aortic insufficiency is the only other condition in which the diastolic pressure may appear as proportionately low. The pulse pressure is a valuable index of the severity

Fig. 1. The diagnoses in cases of this type are often overlooked because of the absence of any visible thyroid enlargement or exophthalmos.

of the hyperthyroidism and closely parallels the basal metabolic rate. In a typical early case of exophthalmic goiter in a young woman of this age, the systolic blood pressure would be 124 and the diastolic 68 in contrast to a systolic blood pressure of 120 and a diastolic of 80 in a normal person. As the disease progresses the systolic pressure increases so that a marked hypertension often occurs in patients approaching a crisis.

The basal metabolic rate has been the means of sending more than one person to his grave. When accurately determined, on a reliable machine and properly interpreted together with the clinical findings, the metabolic rate is of great value. This important laboratory aid has frequently been condemned by competent honest physicians because the preceding qualifications for an accurate test had not been fulfilled. Either the machine was inaccurate and the test did not check with the clinical findings, or the technician made an error, or the clinician allowed his own better judgment to be overruled by the test. Even reliable technicians and machines may err.

Recently I operated upon a man for a well developed case of exophthalmic goiter. A few weeks before this patient entered our clinic with apparent symptoms of incipient hyperthyroidism. The examining physician sent the patient for a metabolism test and was greatly surprised when a normal rate of +6 per cent was reported. He called me in consultation and I was likewise surprised and misled by the test. We decided to try the patient on a therapeutic iodine test for a week. This resulted in a fair degree of improvement, so the iodine was withdrawn and the patient observed for two weeks. His symptoms then became pronounced, he lost six pounds in weight, developed a typical stare and a 20 point increase in the pulse pressure; we were then convinced that he had a true hyperthyroidism. The patient was sent for another metabolism test and this time the report came back +42 per cent. It is possible, of course, that were dealing with a very early case, but I shall always feel that there was an error in the metabolic report. For years I have been checking very carefully to prove such a mistake on the part of our technicians or metabolic machine, but the final analysis has in

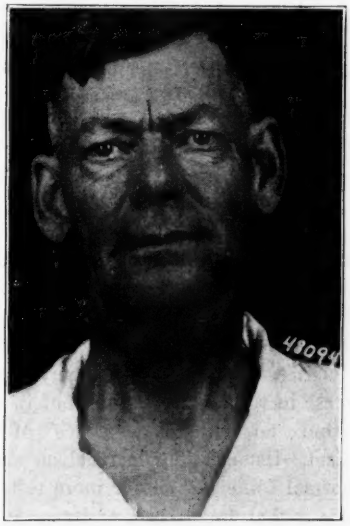


Fig. 2. The same patient three months after thyroidectomy; he gained 38 pounds.

almost every instance shown the error to be on my part.

To return to the case under discussion, I should certainly hesitate to advise a thyroidectomy to relieve hyperthyroidism in any young woman in whom the metabolic rate was +25 per

cent or less, even if all the preceding tests for accuracy were fulfilled. If a second test showed no lower, a careful check should be kept on the patient, and a therapeutic iodine test tried. As a rule, however, a second or third test, unless true

Fig. 3. Pseudo-exophthalmic goiter. Prominent eyes, thyroid enlargement, tremor and rapid heart. Basal metabolic rate +25. Blood pressure normal, no weight loss. Colloid goiter in a nervous girl.

hyperthyroidism is present, will often approach normal as the patient overcomes his nervousness and becomes accustomed to the machine. If a normal person merely breathes rapidly enough he can send a rate up to two or even three times normal. Face masks that pinch the nostrils often record inaccurate reports because of the patient's inability to breathe easily. During the past few years I have observed many persons who had been advised to have a thyroidectomy because of an increase in the metabolic rate, but in whom I could find no clinical evidence of hyperthyroidism. Usually their metabolism was found to be normal following one or more tests.

Why is it that frank cases of hyperthyroidism are often treated for heart disease, even by competent physicians? Because heart disease is usually expected in persons past middle life and at this age hyperthyroidism often develops in an insidious manner. The extreme emotionalism and nervous instability often seen in younger persons is absent. Frequently no enlargement of the thyroid gland is visible or palpable particularly if the goiter is substernal. Recently I saw a case of this type. The patient had been bed-ridden for eighteen months during which time there had been a loss of more than 100 pounds. There was no exophthalmos, but on swallowing it was possible to grasp momentarily the upper right lobe as it ascended from the thoracic cavity. Figure 1 illustrates such a case of this type, this patient had been under observation for three months by competent physicians who failed to consider the possibility of an exophthalmic goiter, because of the apparent absence of any enlargement of the thyroid and of exophthalmos. If the blood pressure readings

Fig. 4. This patient does not appear toxic, but was admitted in a crisis of exophthalmic goiter. Basal metabolic rate +66, high pulse pressure, rapid weight loss.

had been carefully studied or if the fact that the patient had lost 40 pounds in weight in spite of a good appetite had been given consideration, the diagnosis would probably not have been overlooked.

Because a goiter has been present twenty or thirty years in a patient without causing trouble, auricular fibrillation, chronic myocarditis and edema of the legs is too frequently attributed to primary cardiac disease. The fact is lost sight of that an adenomatous goiter is present on an average of twenty years before hyperthyroidism develops. Then the onset of symptoms is so gradual and insidious as to fail to direct attention to the proper source. Hypertension, itself a

sequella of toxic adenoma, is looked upon as the essential type and a meat free or salt free or some other equally ineffectual treatment prescribed. Moreover, when auricular fibrillation and hypertension have developed, it is difficult to repair the

Fig. 5. Case of "iodine fast" exophthalmic goiter. She had been on iodine two years. Severe reaction after stage operations. Basal metabolic rate +77.

damage sustained by the cardiovascular system. While normal rhythm is usually restored following thyroidectomy in long standing cases of toxic adenoma, cardiac irregularity may persist in spite of operation, digitalis and quinidine; however, brilliant therapeutic results are frequently observed with quinidine. For example, in a patient who had an irregular heart action for ten years following a crisis of exophthalmic goiter, but in whom the rate returned to normal and has remained such, within twenty-four hours after receiving quinidine.

Finally, the promiscuous use of iodine has served to increase the mortality rate in the operative treatment of exophthalmic goiter in this country in recent years more than any other one factor. Some of the patients I see have been kept on iodine six, twelve and even as long as twenty-four months. With what results? At first there is a decided improvement in the patient's condition—he no longer loses weight, but instead gains rapidly, the heart quiets down, he is able to sleep again, his mental equilibrium is restored and in every way he appears benefited. So much so that he frequently plunges into his work with new enthusiasm or again takes up his duties with zest. The relatives are pleased, his physician is looked upon as a hero and hailed as a miracle man. The basal metabolic rate is perhaps restored to normal, and the surgeon who advised thyroidectomy is looked upon as a radical operator with incompetent judgment.

Contrast this picture with that of the same patient three to six months later. Following a transitory improvement of a few weeks the patient returns to his physician complaining that his heart is again pounding hard and he is not sleeping as well. His physician after feeling his pulse, taking his temperature and examining his tongue, shakes his head and tells him he has been over-doing and must take it easier. The dose of iodine is doubled, some drops of digitalis are prescribed for the heart and bromides given for insomnia. Perhaps a metabolism test is taken and this seems to confirm the opinion that the patient has been over-doing because it is twice normal. A month later the patient is surprised

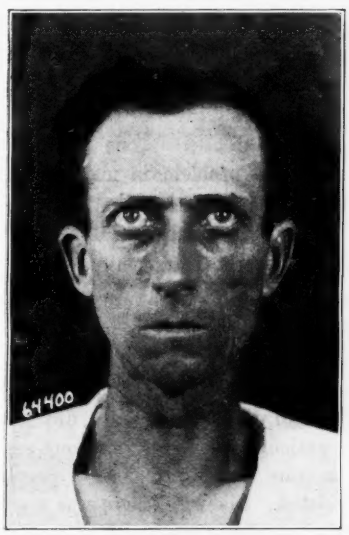


Fig. 6. An "iodine fast" case of exophthalmic goiter. Patient had been on iodine six months; severe postoperative reaction was the result. Patient's life saved by oxygen tent.

because he is only able to pull on his shoes with considerable difficulty. Surely there must be something wrong with the kidneys. Further consultation results in the patient going to bed on a restricted diet with an increased dose of digitalis. After a few days digitalis produces its full

effect and anorexia develops in place of the formerly "splendid" appetite. The family now greatly alarmed asks for consultation, and another physician who has observed other unfortunate cases as this recognizes this condition as one of "iodine fast" exophthalmic goiter—a condition in which after a few weeks of improvement the patient develops a tolerance to iodine so that the disease progresses in spite of the iodine. Seemingly improving and progressing to a cure on account of the gain in weight, loss of stare and tremor and nervous irritability, there is on the contrary a progressive damage to the cardiovascular system. The heart is often decompensated, ascites may develop, hypertension follows and the risk of operation is now increased tremendously. I called attention to this condition at the meeting of the American Association for the Study of Goiter at Denver in 1928: Ewell and I recently reported a long series of these cases.

In my experience two deaths resulted in patients of this type, both of whom had been kept on iodine for several months. A number of others were saved only by means of stage operations, the oxygen tent and the use of iodine intravenously or by the duodenal tube in large quantities. The prognosis in any cases of this type should be extremely guarded because one is dealing with just as serious a problem in many instances as confronted the surgeon previous to the introduction of iodine by Plummer in 1922 in the preoperative preparation of such patients.

In 1924 before we were aware of the danger or really appreciated the full benefit to be derived from the use of iodine in exophthalmic goiter, I reported the fact that a complete reversion of hyperplasia to the colloid state did not occur even on patients who had been kept on iodine several months. Some areas of hyperplasia always persisted. Likewise, there was a secondary rise in the metabolic rate with a persistence of clinical symptoms. These observations have been confirmed and time has shown that iodine is a two-edged sword with regard to the treatment of exophthalmic goiter.

If in doubt as to the diagnosis there is no objection in giving a patient a therapeutic test of iodine for a week, preferably after taking a metabolic test. This should be sufficient, for if the patient really has an exophthalmic goiter there will be a considerable improvement accompanied by a fall in the metabolic rate. If the iodine is stopped and the symptoms again return, together with a rise in the rate, the diagnosis should be settled, and the patient given a period of preparation not to exceed two weeks and then operated upon. In my experience the most favorable prognosis can be given in a patient who has received no previous medication if the goiter is removed eight to ten days after starting the iodine. This, of course, implies that a rest period and a high caloric diet has been given, and that the heart is compensated.

CONCLUSIONS

1. No attempt is made to discuss the generally better understood problems of diagnosis and classification.
2. A few of the more important sources of error in diagnosis and treatment are presented from our records.
3. Particular emphasis is laid upon mistakes in diagnosis arising from failure to interpret properly the basal metabolic rates.
4. The differential diagnosis of neurasthenia and hyperthyroidism is considered of importance.
5. Hyperthyroidism simulating heart disease in older persons is frequently a perplexing diagnostic problem.
6. Attention is called to "iodine fast" cases of exophthalmic goiter and the danger of the prolonged use of iodine.

BIBLIOGRAPHY

1. Jackson, A. S.: Conclusions based on a study of 4,000 cases of goiter. Ann. Surg., 1924, lxxiv, 840-844.
2. Jackson, A. S.: The use of iodine in hyperthyroidism. Am. Jour. Surg., 1929, n.s. vi, 7-10.
3. Jackson, A. S., and Ewell, G. H.: The danger of the prolonged use of Lugol's solution in the treatment of exophthalmic goiter with case reports and a study of the pathology. Am. Jour. Surg., 1930, n.s. x, 475-481.
4. Plummer, H. S.: The value of iodine in exophthalmic goiter. Coll. Papers of the Mayo Clinic, 1923, xv, 565-576.

GENITO-URINARY ANOMALIES*

OTIS W. BRITT, M. D.

WATERLOO, IOWA

Mr. Chairman and Members of the Radiological Section of Illinois State Medical Society:

Before beginning my paper I want to give Dr. Alcock, Professor of Urology of the State University of Iowa, credit for all of this work as the films and histories were taken, through his

*Read before Section on Radiology, Illinois State Medical Society, May 21, 1930.

courtesy, directly from the files. The films and cases that I will discuss comprise some of the most unusual and interesting anomalies of the kidneys and ureters which have been found on the urological service at the State University of Iowa by Dr. Alcock of the past fifteen years. A portion of these cases were done while I was in the X-ray Department of the State University of Iowa Hospital.

To thoroughly understand the mechanism and development of these anomalies, it is necessary to consider the development of the kidney and to go into the embryology of the genito-urinary tract rather extensively; however for a lack of time I will not include this in my paper. There are a few points I would like to bring out before taking up the cases.

First, is the fact that there are a great many more anomalies found in the genito-urinary tract since the advent of the X-ray and visualization of kidney pelves and ureters than before and the reason for this is self evident as that portion of the genito-urinary tract above uretero vesicle orifices cannot be visualized in any other manner and this portion frequently holds many mysteries and possibilities in diagnosis. While at the University Hospital I noticed Dr. Alcock using the X-ray more and more every day and I have heard him say in several talks that to study the genito-urinary tract above the uretero vesicle orifice one is compelled to depend on x-ray findings to a great extent and he advises the free use of this method of investigation of these regions.

Second, the percentage of anomalous kidneys and ureters is apparently higher than it is ordinarily supposed to be even after examination by means of pyelography unless the urologist is continually on the watch for these conditions. It is very easy to do a pyelography, catheterizing a right and left ureter and filling them with sodium iodide and getting films and overlooking a bilateral double kidney and ureters. One should always look for other uretero vesicle orifices and be suspicious of anything that would suggest such an opening. These openings are often found in abnormal positions and some even in the urethra. I will have more to say about the position of the orifices in relation to the kidney pelves further on in my paper.

Third, we have noticed a particularly high percentage of anomalous kidneys which show pathology. In talking this over with Dr. Alcock, he thought I would be perfectly safe in saying that 75 per cent. of the anomalous kidneys show definite pathological changes, particularly stones, hydronephrosis, tuberculosis and sometimes hypernephroma. It is in these cases that it is so essential to diagnose the anomaly as it frequently happens that the right and left pelves that are catheterized are apparently normal, or very nearly so, and yet the patient is definitely a kidney case symptomatically.

I believe the roentgenologist should give the urologist as much help as possible in picking out these anomalous kidneys and ureters and I want to bring out two or three points where the roentgenologist is sometimes the first one to get a hint of such a condition. An elongated kidney should always raise the suspicions of the roentgenologist as to the presence or absence of an anomalous kidney, these usually being double pelves, double pelves with bifurcated ureter or double pelves and double ureters. This information, that is, elongated kidneys, is a very important point as one sees a great number if kidney shadows since there are a larger number of flat G-U plates taken than complete pyelograms. On the pyelogram one frequently notices an elongated kidney with pelvis either in the upper pole or located very near the tip of the lower pole and this is practically diagnostic of the double kidney. The upper kidney pelvis in double kidney pelves has a quite characteristic shape and configuration and should never be overlooked even though there is no other evidence of an anomaly. This kidney pelvis is more or less spider shaped and usually points more upward and outward than a normal kidney pelvis. Usually the uretero vesicle orifice from the superior pelvis is located lower in the bladder than the ureter draining the lower pelvis, thus giving you one long and one short ureter in this anomaly. This frequently aids the urologist in his search for the other uretero vesicle orifice when double kidney is suspected. Another point that should make a roentgenologist very suspicious of a double kidney is the presence of a bud from a ureter as this usually means a bifurcated ureter with double kidney pelvis. Of course, the absence of a kidney shadow after repeated films taken with high milliamperage, low voltage and a relatively short

exposure then makes one suspicious of a congenital absence of the kidney. This same finding, together with a soft tissue shadow elsewhere, suggests very strongly the presence of an ectopic kidney.

Smith, Lester; aged 22 years. Films 333 to 337 incl.
Points of interest:

1. Double right ureter with one of them opening into the prostatic urethra.

2. This ureter which empties into the prostatic urethra a hydroureter and leads to a very large infected hydronephrosis.

History: The patient had always had a weak back and for two years prior to July, 1925, the pain in the back on the right side had been so constant as to prevent him from doing any work to speak of. On July 22, 1925, he experienced his first acute attack. He thought that he had had some slight cold just prior to that time. The pain in the right renal region came on gradually and gradually got worse so that in about three hours it was extremely severe. As the pain increased he developed nausea and vomiting. The pain radiated to the right groin and into the bladder and he had frequent frequency. Within 12 hours of the onset of the pain he had a violent chill of 30 minutes duration and his temperature went to 104. He was admitted to the hospital on the third day of the attack July 25, 1925, with a temperature of 103. He looked very sick. There was much frequency and some burning and smarting on urination and the urine contained a small amount of pus. There was a rather large and very painful and very tender mass in the region of the right kidney. The Wbc was 18,000. Six hours after admission the pain very suddenly disappeared and the mass in the right kidney region could no longer be palpated. The urine immediately was loaded with pus until it was milky. The temperature dropped immediately to normal and the patient's condition rapidly changed for the better. The Wbc dropped at once to 9,000.

Herman, Mrs. Grace; aged 43 years. Films 416 to 422 incl., and 431 and 654.
Points of interest:

1. Bilateral duplication of ureters and pelves.

2. One pair of ureters—a right and a left one—opening normally into the bladder.

3. *Another pair of ureters, a right and a left one, opening into the urethra and leading to upper right and left pelves.*

4. All pelves except the upper left one are normal and this one is hydronephrotic and is the cause of the practically symptomless haematuria.

5. Symptomless haematuria from a hydronephrosis.

History: This patient came to the hospital on account of her diabetes and not for any urinary trouble. In her history however she told a story of attacks of hematuria extending back over a period of 2 years. The hematuria was entirely symptomless and was of the gross type and would come without apparent cause and last for from 2 to 5 days and then suddenly stop. She had had about 3 or 4 attacks each year since 1924 or 1923. Repeated questioning failed to bring out any story of other symptoms unless it was a slight discomfort in the region of the left kidney. There was no blood in the urine while she was in the hospital in December of 1926 and the physical examination failed to reveal any findings relative to the urinary tract. She is a large fat woman and the kidneys cannot be palpated through the thick abdomen. X-ray pictures were negative for anything suggestive of stone shadow and the urine was negative for blood and showed only a very few Wbc.

Lampasis, Wm.; aged 37 years. Films 506 to 510 incl., and 655 and 656.
Points of interest:

1. Bilateral double kidneys with complete double ureters on the left side and a biforcated one on the right side.

2. Symptomless hematuria.

3. Bilateral renal Tbc, the diagnosis being made on the typical pyelograms and the bilateral 'sterile pyuria.

History: About the only symptoms that the patient has ever had has been a gross hematuria. He has had some indefinite pain in the region of the left kidney but it has been so vague and so slight that it can hardly be taken into account. There have been two attacks of gross hematuria, one a year before admission to the hospital and the other one 5 days before coming in. In March or April of 1927 he had his first attack of hematuria. Without cause and without any symptoms of any kind he noticed that he was passing gross blood well mixed with the urine. This kept up for about 48 hours and then stopped suddenly. He thinks that he may have had some slight dull ache in the left kidney region but was not sure about this. There were some small irregular blood clots but no fish worm clots and there were no bladder symptoms at all. He thought little of the attack and did not consult an MD.

There was no recurrence of the condition and he was perfectly well until 5 days before admission to the hospital when he again noted that he was passing gross blood. There was some slight ache in the region of the left kidney and there were a few clots in the urine but no fish worm clots. No chills. No bladder symptoms.

Rowe, Mrs. Berie; aged 64 years. Films 644 to 647 incl.
Points of interest:

1. Bilateral renal calculi.

2. Double right ureter and pelvis with two large stones in the lower right pelvis.

3. Left calculus pyonephrosis with almost complete destruction of the left kidney.

4. The upper right kidney was the only kidney that had any function.

History: In 1926 or three years before admission to the hospital the patient had quite a severe attack of pain in the upper right abdomen and right back. It came on quite suddenly and without cause and did not appreciably increase and after about 6 hours gradually

disappeared and left a residual tenderness for three or four days. She was in bed for three days but did not call a doctor and the pain was not severe enough to require morphine. There were no bladder symptoms and there is nothing in the history to indicate whether or not the urine showed anything abnormal.

Two years later or in April, 1928, she had another attack very similar to the first but this time the pain was on the left side instead of on the right and she thinks that pus was found in the urine but is not sure about it.

Since April, 1928, she has had more or less vague and indefinite symptoms of back ache in the region of the left kidney but these symptoms have never again been severe and she has paid little attention to them thinking that they were a part of her general weakness. For 6 or 8 months her general health has been going down hill and there have been very few localizing symptoms or findings except some slight frequency of urination and a definite and constant pyuria. She has lost much in weight and strength and complains of never having any ambition and being constantly listless and tired and sleepy and with no desire to eat. There have been no chills but on several occasions one or two degrees of temperature have been noted.

Wade, Charles W.; aged 56 years. Films 338 to 342 incl.

History: The patient never had any urinary trouble until sometime in 1923. At this time he became ill, running a temperature without localizing symptoms except pyuria. The temperature ranged from 101 to 104 with some chills. There were no localizing symptoms and it was only the pyuria that led to the diagnosis. There was no pain over either kidney and no bladder manifestations. For three weeks he was up and about but was then confined to bed and at the end of the fourth week he was taken to St. Louis and was under the care of Dr. John Caulk for several weeks. Dr. Caulk ran him through a routine GU examination and found a marked infection of both kidneys more pronounced on the right side than on the left. *X-ray pictures were negative for stone shadow.* There was definite renal insufficiency and signs of uremia. The phtalein after intravenous administration appeared from the left kidney in 35 minutes and from the right in 40 minutes and only very small amounts, much below normal, were excreted from each organ in the following 15 minutes period. The ureters were catheterized nearly every other day and the pelves washed out for a period of several weeks and the patient made a good recovery. The temperature dropped and the pyuria cleared up entirely and the renal function became normal. *Pyelograms were not done.* Dr. Caulk evidently thought that the cause of the infection was in the teeth as he had several of them extracted.

He had no further trouble and was in good health until the first part of August, 1927, or about five weeks before he was admitted to the University Hospital. Previous to this however he had had some attacks of pain in the left back during May and June of 1927. From the first of August he began to have very definite attacks of sudden severe pain in the left kidney region accompanied with chills and a temperature as high as 103. The attacks last 2 to 3 days and the pain leaves as suddenly as it comes on. With the first attack showing temperature he noted marked pyuria.

DISCUSSION

Dr. H. P. Lee, Iowa City, Iowa: I do not know of any series of organs in the human body that presents more interesting anomalies than does the urinary tract. I believe the anomalies in the urinary tract are a great deal more common than one would ordinarily suppose. We have sort of an adage in our clinic at Iowa City that there are no short cuts in urological diagnosis, and on that basis we have developed more or less of a routine.

We, or course, visualize findings in the bladder, but we take x-ray pictures almost routinely in any case where we suspicion anything above the bladder, and I believe that is the reason we have found so many anomalies in the urinary tract. There is hardly a week goes by that we do not find one or two. Of course these patients are referred to our clinic because of suspicion of pathology in the urinary tract.

These anomalies certainly do have a great deal of clinical significance. A number of patients will present no history or findings that will lead one to suspect anomalies and they are found accidentally on routine urological examination. Others, however, will give definite earmarks.

The x-ray man can certainly help the urologist. The x-ray man will notice the discrepancies in the films, and if these things do not check up with what you would expect from the history of the case he should suspect urinary anomalies, and have a critical mind so he will be able to pick up anything he happens to see that is off color.

Dr. Isaac Gerber, Providence, R. I.: In connection with this problem I should like to say something about the new method of urography by means of the intravenous injectioon of uroselectan. Personally, I have not used this for the good and sufficient reason that I cannot get it, but I have had the opportunity of watching it used at the Mount Sinai Hospital in New York. I have also seen the work done in two clinics in Boston where certain amounts were turned over to be used under the supervision of selected urologists.

For those of you who are not familiar with it, I would say that it is a chemical substance that has a particular affinity for excretion into the urine, the same as the Graham dye is excreted into the bile. It is intravenously injected in fairly large amounts, diluted with 100-150 cc. of water. It is injected rather slowly and you get a very slow bilateral excretion into the urinary tract. Eventually you have a complete filling of the pelvis, the ureter on both sides and the bladder. The method likewise gives considerable information as to the functional activity of one side or the other.

Of course, the future is going to bring out the real value for this method, but it will by no means replace cystoscopic manipulation. So much can be found in the cystoscopic examination which cannot be detected

otherwise. But on the other hand, it is going to enormously widen the field in which pyelography will be done, because even today there is a large proportion of patients who either refuse cystoscopic examination because of the difficulties which some of their friends may have had, or are in a condition which does not make it advisable to put them through the pain or shock. On the other hand you may have children particularly where it may be very difficult or perhaps impossible to do an adequate systoscopic examination.

One advantage you do not get with the systoscopic method is that you do not have the opportunity of watching the gradual filling and emptying of all three portions of the tract, particularly the pelvis and the ureters. You can be certain about ureteral pathology. All these anomalies that we saw today are going to be detected at the first examination and not by finding characteristic defects and using three cystoscopic manipulations. You are going to show stones that are overshadowed. On the first examination you will see a faint outline of a shadow, maybe overshadowed by the dye, and later you will see the shadow again and thus be certain. You will not get distortions due to overloading of the calyx or of the pelvis such as you get from overpressure.

Of course, the method is being used now only as a research method in the hands of a few selected people, but I feel when it is popularized it is going to make the pyelographic work of the rotegenologist multiply four or five times, and its usefulness will multiply accordingly.

THE TREATMENT OF CHRONIC MYOCARDITIS*

DON C. SUTTON, M.S., M.D.

From the Medical Departments of Northwestern University Medical School and Cook County Hospital

CHICAGO

There seems to be a more or less natural tendency to neglect professionally that group of cases classified as chronic myocardial degeneration, mainly because it occurs at a period of life when even the best results do not offer so much in actual prolongation of life. Nevertheless, when intensively studied, this group may be made extremely comfortable, often their capacity for physical effort greatly increased, and unquestionably in a large percentage of cases, a useful life may be definitely prolonged.

The proper treatment of this group of cases depends first upon a definite understanding of the underlying pathology and of what is to be expected from the therapeutic action of the drugs used. By chronic myocardial degeneration we have in mind a heart that grossly shows usually hypertrophy of the left ventricle, often the right, and very often with concommitant dilatation. On cut section of such a heart the pink color of the muscle is seen to be streaked by areas of grayish white tissue which is fibrous scar tissue that has either developed as a result of outgrowths from perivascular changes or from the replacement of degenerated muscle fibers by scar tissue. There is still considerable discussion as to the actual cause of this lesion.

One group represented by Warthen and Clawson maintains that these fibrotic changes are the end result of acute inflammatory reaction, either perivascular or in the muscle tissue. Another and larger group of pathologists holds that these changes are the result of degeneration of muscle fibers following diminished nutrition or blood supply. Usually, grossly, two marked changes in the coronary vessels will be seen either in the form of diffuse sclerosis or arteriosclerotic patches in the intima, or if not grossly seen, microscopic changes will be found. It seems logical that this fibrosis is most likely the result of circulatory change. As a result of restricted blood flow through the constricted artery it is easy to see, especially under increased function, that there may be a great enough loss of blood flow to produce localized degenerative lesions, these being ultimately replaced by fibrous tissue.

This being true we may more probably say that chronic myocardial degeneration is really a part of the pathology of arteriosclerosis of coronary circulation. This is further amplified by the fact that we find this disease occurring during that period of life when vascular degeneration is present to a greater or less degree in other organs of the body. While occasionally the myocardial symptoms may be predominant, they are usually associated with other diseases recognized as being degenerative, namely, generalized arteriosclerosis with or without hypertension, the chronic nephritis of arteriosclerosis and pulmonary emphysema.

In other words, we are dealing with a lesion that is a part of a general degenerative process that occurs with increasing age, the date of onset and severity varying greatly in different individuals. If this conception is correct, our therapeutics then are given to increase first blood flow through the coronary vessels, thereby increasing muscle nutrition, and again, the use

*Abstract of a discussion of symptoms and treatment of chronic myocardial diseases before the Rock Island County Medical Society, May 13, 1930.

of those drugs which increase the contractile power of the heart.

In recent years a group of drugs has been extensively studied that has a specific dilating effect upon vessels as a whole, and especially those of the heart itself. This group of coronary artery dilators consists first of the nitrites which produce prompt and extreme increase in coronary flow, as shown in experimental studies, but have a disadvantage of their action being of very short duration. As will be seen later this group has a real value in emergencies, but is unsatisfactory in any attempt to keep up permanently an increased coronary flow. The next group consists of a series of compounds derived from caffein and theobromine. Caffein and its derivatives are only moderate in their action on the coronary vessels, and have the disadvantage of producing considerable cerebral stimulation with consequent loss of rest on the part of the patient. The theobromine series, on the other hand, produces marked coronary dilatation, and at the same time affects slightly the cerebral centers. In this group the most efficient are euphyllin, theocalcium, theosine and diuretin.

All this group are satisfactory coronary dilators, the latter two having also the advantage of being the most marked diuretics. Unfortunately all of them except theocalcium, when taken over a long period of time, tend to upset the stomach. The most satisfactory coronary dilator is euphyllin in doses of 1½ grains three times a day. If this upsets the stomach it may be replaced permanently or for short periods of time with 7½ grains of theocalcium three times a day. This very rarely upsets the stomach and can be taken usually indefinitely without any disturbance. This group is especially effective in those individuals who as a result of their coronary disease are having anginal attacks on exertion. If sclerosis of the arteries has not advanced to a point where the arteries are no longer capable of dilating, the giving of euphyllin or theocalcium usually increases greatly the amount of effort these individuals can undergo without bringing on an attack of angina.

For treatment of the anginal attack the nitrites in either the form of nitroglycerine or amyl nitrite are preferable because of their rapid action and greater dilatation of the coronary arteries.

Not only this group but also a group showing moderate effects of decompensation, as dyspnea on exertion, some edema of the feet at the end of the day, will usually show marked improvement by the giving of either of these drugs.

In this group of cases digitalis is given for its tonic effect on the muscle and not to produce what is ordinarily called complete digitalization. From much of the literature which has appeared as a result of the work of Thatcher and Eggleston, the idea seems to be prevalent that it is useless to expect satisfactory effects from digitalis in any except full physiological doses. This is especially true in auricular fibrillation where the specific effect of digitalis in blocking impulses between the auricle and ventricle results in the slowing of the pulse rate. But advantage can be taken of the several actions of digitalis—first, through its effect on the vagus centers there is a slowing of the heart rate which is produced largely by increasing the diastole, which means a more complete filling of the heart and as an end result increasing strength of contraction. Very closely associated with this effect is the direct effect on the heart muscle of increasing tone and also contractibility. These results can be achieved with quite moderate doses of digitalis, certainly markedly below those doses required for the production of toxic symptoms.

Very often in those individuals who complain only of fatigue and slight or moderate dyspnea, the giving of a grain and a half to two grains of digitalis a day will cause complete disappearance of symptoms for long periods of time. It is rare that it is necessary to give over three or four grains a day, and there are very exceptional instances in which one grain a day is entirely sufficient.

I desire to call attention especially to the fact that when digitalis is prescribed in liquid form a drop with the ordinary medicine dropper represents usually not more than one-half minum. A grain of powdered leaf represents ten minums of a standard tincture, so that one prescribing tincture digitalis in drop doses is giving only half the amount he expects on a minum basis, and certainly digitalis in doses of five drops (2½ minum dose) is ineffective. Further, it is quite common to have patients state that they take digitalis only when feeling badly and feel its effect in a very few minutes. This

effect can only be psychic, since it takes several hours for a dose of digitalis to have any effect and probably any effect of digitalis is only obtained after a certain concentration is reached and maintained in the blood stream.

Besides the direct medication of these patients a great deal may be done in modifying their mode of living. These patients must be made to recognize the fact that they have reached a point in life where their activity must be definitely restricted compared with the normal younger individual, by modification of working hours, by additional rest periods, such as naps after meals, by the cutting down of excessive golf, these individuals can be made much more comfortable. Often when these individuals are beginning to show even moderate signs of slight decompensation or are having frequent attacks of angina, a marked improvement and one that is more lasting may be achieved more promptly by two or three weeks complete rest in bed, or a change to some watering place. In those individuals with marked emphysema or bronchial involvement with resulting cough, very marked improvement may be obtained by sending them to a warmer climate during the winter months. To a lesser degree the winter climate is certainly of definite value to the whole group.

30 N. Michigan Ave.

SPINAL ANESTHESIA—REVIEW OF THE LITERATURE

ALVIN M. WINOGRAD, M. D., and
HAROLD H. ROSENBLOOM, M. D.
Nelson Morris Research Institute, Michael Reese Hospital
CHICAGO

Within the past few years spinocain solution has become very much popularized for the production of spinal anesthesia; perhaps preferably called spinal analgesia since the tactile and thermal sensations are not completely abolished by it. Spinocain, first prepared by Pitkin and his co-workers in 1927, consists chiefly of novocaine, and the latter or some other cocaine derivative has now been used quite extensively for spinal anesthesia both here and abroad; and since this type of anesthesia is rapidly gaining popularity, a review of the literature to note the results reported and to familiarize ourselves with this form of anesthesia has prompted this report.

Corning[1] in 1885 was the first to attempt to relieve pain of a diseased spine by the injection of cocaine. Quincke[2] in 1891 was the first to withdraw spinal fluid by lumbar puncture. Bier[3] in 1899 successfully injected cocaine into the spinal canal, also in the same year Tait and Cagleri[4] used cocaine in the spinal canal for surgical anesthesia. The results proved very unfavorable and somewhat disastrous up to this time. Then less toxic drugs were introduced—stovaine by Fourneau[5] in 1904 and novocaine by Einhorn in 1905. More favorable results were then obtained through further efforts by Brauer, Babcock[6] and Labat[7]. Barker[8] in 1907 introduced the use of light and heavy solutions of novocaine to control the extent of analgesia. Pitkin[9] introduced the routine use of ephedrine in spinal anesthesia and perfected the technic of administration.

Technique. Spinocain has proven to be much superior to any preparation previously used. Stovaine and tropacocaine, although they produce more complete relaxation, are less favorable because of the toxic effects, pains and headache produced by them. Apothesin is also more toxic and produces severe vasomotor disturbances. Spinocain (light) is a solution having a specific gravity lower than spinal fluid and consisting of (Pitkin's solution):

Novocaine	200 mg.	
Strychnine	2 mg.	Sp. gr. 1.0005
Ethyl hydrate	300 mg.	
Amyloprolamin	130 mg.	
Normal salt sol. QS Ad.	2 cc.	

Amyloprolamine, a starch derivative, renders the solution more viscid, preventing too rapid dissemination and thus prolonging the anesthesia. The strychnine acts as a stimulant helping to prevent too rapid a drop in blood pressure. The technique, essentially as described by Pitkin is as follows: The patient is prepared locally in the usual manner, the bowels are emptied.

1. Morphine ¼ gr. and scopolamine 1/150 gr. is given one hour before operation to allay fear and apprehension.

2. Ephedrine is to be given subcutaneously 5-10 minutes before the lumbar puncture to prevent a drop in blood pressure. It is not very effective if given after anesthesia has been produced. The drop in blood pressure is due to

paralysis of the rami communicantis and their corresponding sympathetics thus producing a dilatation of the splanchnic vessels. The dose depends upon the patient's blood pressure and especially upon the height of anesthesia to be produced. 1 cc (50 mg.) is the average dose, if the anesthesia is to expand to the sixth dorsal nerve. Taking the blood pressure of 120/70 as average, a patient having a pressure of 90/60 requires 1 cc of ephedrine to bring it to average, while one having a pressure of 200/100 should not receive more than half the average amount.

3. Lumbar-puncture should be preceded by local anesthesia produced by a cutaneous wheal raised with ½-1 cc of ephedrine novocaine solution. The puncture should be done with the patient lying on the side with the head slightly lowered. Withdraw about 30 drops of spinal fluid.

4. Injection of spinocain should be done slowly first mixing with spinal fluid, injecting a small amount of mixture and again withdrawing and rediluting with spinal fluid. Dosage of spinocain:

For perineal region—1 cc at 15-18° Trendelenburg position.
For legs—2 cc at 10-15°.
Up to umbilicus—2-3 cc at 7-10°.
Up to costal margin—3 cc at 5°.

The patient is kept in the Trendelenburg position during the operation and the foot of the bed is kept elevated for 12 hours after the operation. Romberger[10] believes that the ideal strength of solution to use is 4 cc of spinocain diluted to a total of 8 cc with spinal fluid. He believes this preferable to the smaller amount recommended by Pitkin, and he does not hesitate to repeat the dose until the necessary analgesia is produced. Pitkin favors the use of a short tapered needle of a small caliber, to avoid hemorrhage, which he believes is responsible for postanesthetic headaches, and also because with a long pointed needle only part of the needle may be inside the dura, thus giving incomplete anesthesia. Analgesia generally lasts 3-4 hours, the spinocain being presumably absorbed along the nerve trunks.

Advantages. Spinal anesthesia is being considered by many as the ideal anesthetic and has been called by some the "surgeon's paradise." It does not produce the complications common to inhalation anesthetics, such as bronchitis, pneumonia, lung abscess, ileus, cardiac or gastric dilatation, albuminuria or acidosis. It is, therefore, especially indicated in advanced cardiac or pulmonary diseases, renal disease, hypertension and in emergency operations, especially if the stomach is not empty. It produces almost absolute muscle relaxation and is therefore very useful in strangulated hernia, intestinal obstruction and for the relief of paralytic ileus. Favorable reports concerning the use of spinocain are found in the various specialties such as that of Albee and Fry[11] in orthopedic surgery, Jeck[12] in urology, Cosgrove[13], and Pitkin and McCormack[14] in obstetrics and Case[15] in abdominal surgery. The advantages, for example, in obstetrics as suggested by Pitkin and McCormack may be listed as follows:

The dangers of inhalation anesthesia are eliminated, as cyanosis, suffocation, and swallowing the tongue.

Asphyxia or cyanosis of the child is less frequent.

Transmission of ether, chloroform, etc., to the child is eliminated.

Post operative lung and intestinal complications are less frequent.

Dehydration is not produced and fluids may be given ad lib. which is particularly desirable in toxemias.

Patients may co-operate easily. Shock is eliminated.

Vomiting is rare. Distension and ileus do not occur as with inhalation anesthesia.

Cardiac and pulmonary cases may take the anesthetic more safely.

Post-partum hemorrhage is less frequent. The uterus contracts quickly.

Rapid dilatation with softness of the cervix and extreme elasticity of the cervix is produced.

The opinion of physicians specializing in anesthesia would be valuable here. Romberger[10], who has administered over 20,000 inhalation anesthesias in the past fifteen years, states that the post operative morbidity is considerably less under spinal than any other type of anesthetic he has ever administered. Stout[16] reports volume control technic in 600 cases, stating that he can produce satisfactory anesthesia to any desired level of the body by the use of novocaine in spinal fluid. Later he reported 1,000 spinal anesthetics from the Jackson Clinic without a single fatality directly or indirectly traceable to

the anesthetic. Furthermore, a questionnaire submitted to patients after operation revealed that 95 per cent. declared themselves preferring spinal to inhalation anesthesia.

Disadvantages. Rygh and Bessesen[17] in reviewing the literature with reference to causes of death from spinal anesthesia found only four deaths out of 44,241 cases directly due to the anesthetic, being due either to vasomotor paralysis or interference with respiration. Vasomotor paralysis is manifested by nausea, pallor, cold sweat, slow pulse and drop in blood pressure. This may be prevented by the use of ephedrine before and adrenaline during the anesthetic. Blood pressure readings should be taken frequently, especially the first 15 minutes of the anesthetic. Respiratory paralysis may be avoided by preventing the anesthetic from extending beyond the diaphragm, and if it develops, artificial respiration aided by adrenaline and caffeine should be instituted.

Failure to obtain analgesia may be due to one of two reasons: 1. The injection was either wholly or partially extradural due to movement of the needle. This is by far the most common cause and a second attempt will usually be successful; or 2, Idiosyncrasy to novocaine.

Post operative headache may be eliminated by proper technic as suggested previously, but if encountered is best relieved according to Koster[18] by retention enemas of 6 ounces of 50 per cent. magnesium sulphate every 4 hours in order to lower cerebrospinal pressure.

Stout recommends the use of sodium barbital 10 grains given by mouth 1½ hours before operation to prevent the possibility of convulsions which rarely occurs. One should be careful of hemostasis especially if the blood pressure is lowered by the anesthetic.

There are various reports, especially in foreign literature, of neurologic complications. Most of these reports, however, do not include the improved solution and technic by Pitkin. Koster mentions several cases of diplopia developing with spinocain and one case of paresthesias of the buttocks and anal region lasting only a few days, and one case of inability to use the extensors of the left leg for four months. The authors have noted paresthesias in the legs persist for weeks with the use of spinocain. Paul[19] reported in 1921 on residual spinal cord symptoms with loss of sphincter control and development of saddleback anesthesia, and loss of sexual feeling in one case. Degenerative myelitis[20], probably due to direct injection of fluid into cord, has been reported. Ferey[21] reported a case of hemianesthesia developing as a complication. Violato[22] reported on ocular complications. Tremiterra[23] spoke of a case of vitiligo developing after spinal anesthesia.

Although there is an enormous amount of literature on spinal anesthesia, its development, perfection and statistical reports with arguments for and against its use, one finds that surprisingly little has been written as to pathologic study of the brain and cord either experimentally or post-mortem in the human in whom spinocain had been used. Pitkin[24] reported that novocaine in 5, 10 or 20 per cent. failed to produce any macro. or microscopic changes in the cords of dogs autopsied at 2, 4 and 5 days, and one dog at 10 days after the injection. No examination was made more than 10 days following the injection. He did, however, find pathologic changes following the use of stovaine. Under 5 per cent. stovaine 30 per cent. of the dogs showed transitory or permanent paralysis of the hind legs. All cases under stovaine showed perivascular round-cell infiltration and swollen axis-cylinders (Cajal stain), marked degeneration of the peripheral nerve fibers (sciatic). Yet, Desplas[25] in 1923 reported 2,000 cases of spinal anesthesia by stovaine without one fatal accident and favors the use of stovaine-caffeine mixture. Heineke and Lawen[26] in 1905 reported the use of novocaine-adrenaline solution, apparently without ill effects. Their work does not include any pathologic study. Franke[27], in 1927, reported an autopsy in a case five days after operation for varicose veins in which 4 cc of 5 per cent. novocain-adrenalin solution had been used intraspinally. The patient was in collapse during the operation. Two days later he had paresthesias and loss of sensation in the legs. Paralysis of the toes developed. The paresthesias gradually ascended and he died on the fifth day. Autopsy revealed bilateral pneumonia, obstruction of the pulmonary artery by clots, the brain showed only cerebral anemia. The spinal cord however revealed a swelling in the lumbar region about 5 cc in extent with an area of softening about 2 cm just above the swelling. The surface of the

cord was irregular and on transverse section showed multiple hemorrhages which reached as high as the medulla, gradually diminishing. Microscopically in the region of the lumbar spinal cord were found hemorrhages in the commissures and posterior horns with scattered streaked hemorrhages in the region of the lateral columns. The myelin sheath stained irregularly in the lumbar region at the parietal columns and pyramidal tracts. The basal fasciculi were well stained and unharmed. The dorsal cord revealed less hyperemia and hemorrhage. The myelin sheath stain here was regular throughout with no recognizable ascending degeneration in the dorsal cord. The author believes that the changes were produced by a decomposed adrenalin solution rather than by the novocain in the mixture.

In conclusion, one sees that clinical reports of thousands of cases seem to favor the use of spinal analgesia with novocain, especially spinocain, although scattered reports of neurologic complications suggest the possibility of pathologic changes by this drug. Also that study of the central nervous system from a pathologic standpoint after intraspinal injection of novocain has been very limited. The authors are at present engaged in such a study, with particular reference to spinocain, because of its widespread use, with special emphasis on the spinal cord changes a longer time than has heretofore been noted after exposure to the drug, so that sufficient time may be allowed for pathologic changes to become evident if such are to occur.

55 E. Washington St.
310 S. Michigan Blvd.

BIBLIOGRAPHY

1. Corning: Spinal Anesthesia and Local Medication of the Cord. New York Med. Jour. 42 (483), 1885.
2. Quincke: Die Lumbalpunction des Hydrocephalus. Berl. klin. Wchnschr. 28 (929-965), 1891.
3. Bier: Versuche uber cocainisrung des Rucklenmarks. Deutsche Ztschr. f. Chir. 51-361, 1899.
4. Tait, D., and Cagleri, G.: Trans. Med. Soc. Calif., 1900. Experimental and clinical notes on the subarachnoid space.
5. Fourneau, E.: Stovaine, anesthesique local. Bull. d. Sc. Pharmacol. 10 (141-148), 1904.
6. Babcock, W. W.: Spinal Anesth. Am. J. Surg. 5 (571-577), 1928.
7. Labat, G.: Elimination of Dangers of Spinal Anesthesia. Am. J. Surg. 5 (625-633), 1928.
8. Barker, A. E.: Clinical Experience with Spinal Analgesia in 100 Cases. Brit. M. J. 1 (665-674), 1907.
9. Pitkin, G. P.: Controllable Spinal Anesthesia. Am. J. Surg. 5 (537-554), 1928.
10. Romberger: Am. J. Surg. 7, 3 (377).
11. Albee and Fry: Spinal Anesthesia in Orthopedic Surgery. Am. J. of Surg. V. 6 (608), 1928.
12. Jeck: Spinal Anesthesia in Kidney and Ureteral Operations. Am. J. of Surg. V. 6 (611), 1928.
13. Cosgrove: Spinal Anesthesia in Obstetrics. Am. J. Surg. V. 6 (602), 1928.
14. Pitkin and McCormack: Controllable Spinal Anesthesia in Obstetrics. Surg., Gyn. and Ob. 47 (713), 1928.
15. Case: Lumbar Anesthesia in 1100 Cases. Am. J. Surg. V. 6 (615), 1928.
16. Stout, R. B.: Amer. Jour. Surg. VII, 1 (55), 1929.
17. Rygh, Edgar A., and Bessesen, Daniel H.: Causes of Deaths from Spinal Anesthesia. Minnesota Medicine 11 (744-747), 1928.
18. Koster: Am. Jour. Surg. (568), Dec., 1928.
19. Paul, W. E.: Residual Spinal Cord Symptoms Following Intraspinal Anesthesia. J. Nerv. and Mental Dis. 53 (223-225), 1921.
20. Post-Anesthetic Degenerative Myelitis, Case. Wien. klin. Wchnschr. 41 (1002-1005), July 12, 1928.
21. Ferey, D.: Accidental Hemi-Anesthesia, Report of Case. Bull. et mem. Soc. nat. der chir. 55 (438), March 23, 1929.
22. Violato, A.: Ocular Complications of Spinal Anesthesia Riv. oto-neuro-oftal. 4 (468-488), July, 1927.
23. Tremiterra, S.: Spinal Anesthesia Followed by Viteligo. Rimasc. med. 4 (107), March 1, 1927.
24. Pitkin: Amer. J. Surg. V. 6 (537), 1928.
25. Desplas: Spinal Anesthesia and Its Drawbacks. Lancet, London, II (1233-1235), 1923.
26. Heineke and Lawen: Erfahrungen mit novokain in der Medularanesthesie. Deutsche Zeits. fur Chirurgie 80 (192), 1905.
27. Franke: Permanent Harm After Lumbar Anesthesia with Novocain-Adrenalin Solution. Dtsch. Z. Cjir. H. 4 (262), 1927.

THE VALUE OF INTENSIVE TREATMENT WITH TRYPARSAMIDE AND MERCURY IN GENERAL PARALYSIS*

O. A. KIBLER, M. D.
CHICAGO

Since Von Jauregg first reported the treatment of general paralysis by the injection of malarial parasites, much work has been done and many reports written as regards the ultimate outcome of these cases. The exact process of the almost miraculous improvement in what has always been considered a hopeless condition is unknown; however, two main theories have been advanced. Some workers consider the hyperpyrexia produced by the malarial paroxyms as the chief cause for remission, others consider the possibility of stimulation of the reticulo-endothelial system plus continued fever. Attempts are being made experimentally to show just what role, if any, the reticulo-endothelial system plays in the amelioration of this condition. About the same time that the pyrexial treatment came into general use the arsenical preparation "Tryparsamide" was shown to have a decidedly valuable effect in teriary syphilis.

*From the Chicago State Hospital.

The drug has the least spirochaeticidal action of any of the arsenicals, but due to its property of tissue penetrability it is particularly valuable in tertiary syphilis, especially neuro-syphilis. The drug has practically no toxic effect except occasionally a temporary amblyopia. Tryparsamide is usually combined with some form of mercury which is used for its decided spirochaeticidal action.

At the Chicago State Hospital we have used the pyrexial treatment produced by the injection of malarial parasites in combination with a follow-up treatment of tryparsamide and mercury in a large number of cases. We have also used tryparsamide and mercury alone in a number of selected cases. Our results are uniformly good using either method. We have observed that when initial hyperpyrexia is produced, clinical improvement takes place much earlier than when tryparsamide and mercury are used alone; however, an equal stage of remission has been noted with tryparsamide and mercury if treatment has been intensive and continued over a long period of time. The laboratory findings do not show early improvement, in fact, very little change for the better is seen in the spinal fluid immediately following a series of malarial paroxysms. However, when tryparsamide and mercury are given intensively gradual improvement is seen. In many of our cases the spinal fluid has become practically normal. We have occasionally observed a case in which the patient showed clinical improvement with very little change in the laboratory findings, but have never seen a case in which the spinal fluid has become normal and at the same time the patient showing no clinical improvement.

I have selected twenty cases of typical general paralysis, which have been under close observation for a period of eighteen months or more. All have received tryparsamide and mercury each week. Ten cases received an initial pyrexal treatment of malaria. The results show the value of intensive treatment with tryparsamide and mercury. The largest number of doses of tryparsamide and mercury number one hundred ninety-six, the least number forty-eight. All cases have had a weekly urinary examination and have been questioned closely for any untoward symptoms.

Various eye examinations have been made.

CHART 1

ON ADMISSION

Case	Blood	Spinal Fluid		
	Wassermann	Globulin	Cells	Wassermann
1	4 plus	3 plus	20	3 plus
2	3 plus	4 plus	14	3 plus
3	2 plus	3 plus	36	4 plus
4	4 plus	3 plus	84	2 plus
5	4 plus	2 plus	16	3 plus
6	3 plus	4 plus	12	4 plus
7	4 plus	3 plus	41	3 plus
8	3 plus	3 plus	26	4 plus
9	3 plus	4 plus	17	3 plus
10	1 plus	4 plus	23	4 plus

AFTER TREATMENT (TRYP. AND MERCURY)

Case	Blood	Spinal Fluid		
	Wassermann	Globulin	Cells	Wassermann
1	Neg.	1 plus	8	Neg.
2	1 plus	Neg.	6	Neg.
3	Neg.	Neg.	2	1 plus
4	Neg.	2 plus	42	1 plus
5	2 plus	Neg.	9	Neg.
6	Neg.	Neg.	7	Neg.
7	Neg.	1 plus	8	Neg.
8	Neg.	Neg.	11	Neg.
9	1 plus	Neg.	4	Neg.
10	Neg.	2 plus	19	2 plus

CHART 2

ON ADMISSION

Case	Blood	Spinal Fluid		
	Wassermann	Globulin	Cells	Wassermann
1	3 plus	4 plus	11	3 plus
2	3 plus	4 plus	13	3 plus
3	2 plus	4 plus	26	4 plus
4	4 plus	3 plus	43	4 plus
5	4 plus	4 plus	17	4 plus
6	4 plus	3 plus	18	3 plus
7	4 plus	3 plus	34	3 plus
8	3 plus	4 plus	27	2 plus
9	2 plus	4 plus	9	4 plus
10	2 plus	4 plus	14	4 plus

AFTER TREATMENT (MALARIA, TRYP. AND MERCURY)

Case	Blood	Spinal Fluid		
	Wassermann	Globulin	Cells	Wassermann
1	2 plus	2 plus	13	2 plus
2	Neg.	Neg.	6	Neg.
3	1 plus	2 plus	17	1 plus
4	Neg.	Neg.	9	1 plus
5	Neg.	Neg.	9	Neg.
6	Neg.	2 plus	17	1 plus
7	Neg.	1 plus	12	1 plus
8	Neg.	1 plus	19	2 plus
9	Neg.	Neg.	9	Neg.
10	1 plus	1 plus	12	2 plus

Chart I represents a series of cases treated with three grams of tryparsamide intravenously and one and one-half grains of mercury salicylate intramuscularly each week. All have been treated for at least two years with as few periods of rest as possible. The oldest case has been treated constantly for six years. The number of treatments range between ninety-four and one hundred ninety-six doses of tryparsamide and mercury. Eight of the ten cases clinically show

complete remission and are working daily. The remaining two cases are still in the hospital showing some improvement, but not sufficiently so as to carry on their work on the outside.

Chart 2 shows a series of cases which have been treated by injection of benign tertian malarial plasmodia. Inoculation was made by intravenous injection of 3 c.c. of infected blood from a previously infected individual. Chills and fever were allowed to take place over a period of four weeks and then arrested by administration of quinine, ten grains T.i.d. for three days. Some cases received two and some as many as three series of malarial treatments. All cases were followed up by administration of three grams of tryparsamide intravenously and one and one-half grains of mercury salicylate intramuscularly each week, with no periods of rest. Eight cases have received constant weekly follow-up treatments for an average time of eighteen months. Two cases developed ambylopia after the first few treatments with tryparsamide so the follow-up treatment has been confined to the intramuscular injection of mercury only. Clinically, five of the preceding cases show complete remission and are working daily. Three are much improved and two cases which received no tryparsamide show very slight improvement.

Summary and Conclusions: Twenty cases of general paralysis were treated intensively with tryparsamide and mercury. Ten received initial pyrexial treatment of malaria. Treatment continued for a period of time ranging from eighteen months to six years with the least number of periods of rest possible. The largest number of injections of tryparsamide and mercury were one hundred and ninety-six, the least number, forty-eight.

Thirteen cases show complete remission.

Five are much improved and two show slight improvement. Clinical improvement was noted early. Laboratory findings gradually improved, but only after long continued, intensive treatment with tryparsamide and mercury did they become normal. In two cases tryparsamide could not be given. These two showed the least improvement.

These results lead us to believe that long, intensive treatment with tryparsamide and mercury offers the best chance for lasting remission.

Chicago State Hospital.

RESULTS OF THE TREATMENT OF PULMONARY TUBERCULOSIS BY THIOSULPHATE OF GOLD AND SODIUM*

LEON BERNARD, M.D.
Professor of Medicine, Faculty de Medicine, University of Paris
PARIS, FRANCE

For over four years the author has studied the action of thiosulphate of gold and sodium (sanocrysine of Mollgaard, crisalbine of Poulenc) in the treatment of pulmonary tuberculosis.

In previous instances he had come to the following conclusions:

1. That the thiosulphate of gold and sodium is not a specific drug for tuberculosis;
2. That this drug often exerts a favorable action on pulmonary tuberculosis;
3. That this favorable action is most evident in the evolutionary periods of pulmonary tuberculosis.

Today with more extended statistics, not only can we confirm the results related in the past and bring forth some new facts on the action of this sort of gold, but show the considerable improvement in the radiographic images which may be noted a few months after treatment, and also report happy results in certain cases of apyretic forms of tuberculosis.

We will divide our observations into two groups:

1. The chronic cases, whether with little fever or without,
2. The acute forms or rather those with acute evolutionary stages.

As we have already stated, it is this last group which has furnished us the greatest number of interesting facts.

1. FEBRILE CASES

Actually, we have treated 142 such cases of pulmonary tuberculosis.

In 62 of these cases the treatment produced a slow lowering of temperature, which finally led to the apyretic stage.

In 80 patients not improved, 58 had received a sufficient treatment, whilst the others only had a few injections of gold. We will, however, include these in our total percentage. Counting

*Read before the members of the 1929 Foreign Assemblies of the Inter-State Post-Graduate Medical Association of North America, Paris, France.

these, the statistics show more than 43 per cent. arrests of the acute stages.

Let us study more closely the most favorable cases out of the 62 actually observed by us.

On the whole, this favorable result manifests itself by an arrest of the evolutionary stage with the usual clinical consequences of such an arrest; dropping of fever, increase in weight, improvement in the general condition, lessening of the functional signs, slight amelioration of the physical signs.

The following is a description of the development of the two symptoms, the modifications of which are at the same time most objective:

(a) *Temperature curve.* The examination of this is most characteristic. The frequent coincidence of the temperature going down at the beginning of the treatment and the progressive continuation of such with each injection of this drug, are the best arguments in its favor.

This influence can be observed in cases of sudden evolutionary development, with temperatures going from 38°c to 39°c (100.4 to 102F). One knows, however, of the frequent tenacity of these febrile states in tubercular cases. Some favorable results were observed in patients who presented a temperature "en plateau" for several months, notwithstanding rest in bed.

In fact, in order to be sure of our results, it has been our practice to observe the patients for about three weeks and start the treatment only when the temperature does not show any tendency to a sudden drop.

(b) *X-ray findings.* We had stated at one time that the x-ray images showed very little modification in a majority of cases, but today we bring documents which seem to prove the contrary.

This change of opinion is due to the fact that we are able to observe and examine these cases again six months or a year after the treatment, and very often a radiological modification of the lung picture is only manifested after this long space of time. During the treatment, however, the x-ray pictures undergo very little modification, notwithstanding the improvement of the general condition.

The actual modifications soon after a certain space of time indicate a tendency to sclorosis: the shadows become more marked and the extent of the lesions diminish as a consequence of a progressive retraction of the infected region.

In other cases, the shadows fade out, although their outline does not seem to change.

In some cases the modifications are very marked and even with regard to the volume of the cavities.

In other words, we have found, in a number of cases, that the treatment by thiosulphate of gold and sodium stops the acute stages of pulmonary tuberculosis, and in some cases, has even arrested the symptoms of caseous-pneumonia.

Is this arrest due to the action of the drug, or is it simply a coincidence, knowing that spontaneous arrests of these stages very often take place?

Spontaneous Arrest of the Evolutionary Crises. To verify this, we have looked over our records of the Hospital Laennec from 1911 to 1925, excluding the war years.

The total number of patients in a state of febrile evolution admitted during this period is 1,934. Of this figure we have eliminated 393 cases who remained less than a month in the service. Of the 1,541 remaining patients, 808 died (more than half); 671 continued their febrile evolution without tendency to defervescence during all their stay in the hospital. The average duration of this was 2½ months. Only 63 patients presented a spontaneous defervescence of their fever.

Thus we only obtain less than 5 per cent. spontaneous arrests of the acute stages, which is a very small proportion if we compare it to the arrests resulting from the gold therapy, which is more than 43 per cent.

We must note that these statistics apply exclusively to the Laennec Hospital service, where the recruiting of patients has not varied since the application of the treatment. We can therefore very justly compare the two statistics.

Future Results. We have not been able, on account of the fact that our statistics deal with hospital patients, to follow many of them for a long period.

Those that we have seen show that the improvement after the use of gold salts, is not always durable: 17 patients died in the course of the next acute attack in a delay varying from six months to two years after the treatment.

In 15 other cases, however, the apyrexia per-

sisted and a certain number returned for a second series of injections to fortify the results already obtained.

In no case could we speak of a true and final cure of tuberculosis, but the considerable clinical amelioration was continued, allowing the patients to again resume their work and life. Thirty patients who have been followed only for a few months also allow us to justify these hopes.

2. APYRETIC CASES

We have treated a certain number of apyretic cases. Though we cannot report statistics of great value we were struck by three facts:

1. We have seen some cases who were discharged from the hospital as being very little or not at all improved by the treatment, return to us two or three years thereafter, practically cured, having taken up their profession and complaining of no symptoms, either functional or general, and the x-ray screens no longer showing pathological shadows.

2. We have seen other cases who were treated off and on, who continued their daily occupation whilst receiving treatment, who were improved notwithstanding the very unfavorable life they were leading.

3. We have observed one case of a pregnant woman, without fever or evolutionary stages, whom we have treated from the seventh month of her pregnancy. She was confined normally and went through the post partum period without any modification of the lesions.

It is true that we have but one case of this kind and have not yet found any others to substantiate these results.

In conclusion, we have treated 29 apyretic cases; most of them could not be followed for more than a year. It is very hard to conclude as to the value of the treatment, however, but we have the impression that the treatment by the salts of gold has also a favorable action on apyretic cases.

We have the impression that the action of thiosulphate of gold and sodium is too inconsistent to be considered a specific, but it is too frequently brilliant to be rejected. It is probable that this drug does not possess bactericidal properties with regard to the bacillus of Koch, but its restricting action on the phenomena which characterize the evolutionary stages, its action which favors the regression of the lesions—action which is demonstrated in the pictures which we show today, as well as those made known by other authors—the persistence of the effects obtained, allow us to conclude that the influence of this drug does not limit itself to the simple temporary clinical cure of the evolutionary crises, but that it, without doubt, exerts on the tubercular lesions themselves, at least in the lungs, a chemico-therapeutic process of which we totally ignore the character.

Medicinal Reactions. The reactions produced by the drug have caused many people to abandon it. However, in our experience, now over a period of four years, we have found that these inconveniences are reduced to a minimum if the following simple rules are followed:

1. Never apply the treatment to a patient who has diarrhea, albuminuria, or who has entered the stage of cachexia.

2. Never reach the dose gr. 0.5 a week in apyretic patients. We have noted, in fact, that the majority of serious accidents provoked by the drug, were produced in apyretic patients treated with strong doses. On the contrary, the febrile cases, notwithstanding a much more intense medication, have always shown reactions of slight intensity if you do not go over the average dose of gr. 0.75 and if you space the injections by intervals of a week.

By following these rules you protect the patient against unexpected accidents and incidents, which have compromised the reputation of the drug when it first was used—complications which we have never met with when following our own technique.

There are, however, some benignant reactions which should be known:

(a) A frequent febrile reaction, sometime reaching a temperature of 39°c and even 40°c (102 and 104 Fahrenheit) following the injection—febrile reaction which generally lasts less than 24 hours, frequently accompanied by nausea, sometimes vomiting and occasionally headaches.

(b) Albuminuria occurs in less than one-tenth of cases and generally only as traces.

(c) Cutaneous reactions occur in the same frequency as the albuminuria. They also mean that the treatment should be interrupted. As a rule, these reactions consist in a slight pruriginous scarlatiniform erythema which disap-

pears in a few days. Sometimes one notes a painful enanthema of the tongue and pharynx.

(d) Digestive disturbances may manifest themselves in the shape of immediate vomiting —sometimes abdominal pains and a slight diarrhea on the day following the injection.

(e) Possibly a slight tendency to hemoptysis may have been ascribed to the drug in a very few exceptional cases.

After the temporary interruptions the treatment should be started again at a lower dose than the one that has caused the reaction, and continued under careful study of future reactions.

Dosage. In the febrile cases we continue to inject relatively strong doses of the drug, less, however, than were originally advised. In principle, we give only one injection every week.

The first week: gr. 0.25. The second and following weeks: gr. 0.50. According to the general condition and weight of the patient, we continue at gr. 0.50 or we may go up to gr. 0.75. The total dose varied between 5 gr. and gr. 7.50.

It is under these conditions that we obtain the minimum of reactions, of which the risk is not comparable with the chances of improvement which we offer to the patient.

As far as apyretic patients are concerned, we rarely go over gr. 0.25 a week. The treatment then must be carried on a long time, and it is difficult to weigh the benefits of the latter as compared with the results obtained independently from the prolonged rest which is simultaneously prescribed.

CONCLUSIONS

We repeat again that thiosulphate of gold and sodium is not a specific remedy for tuberculosis. However, its therapeutic action, though inconstant, seems to us certain. From our experience, it particularly shows and asserts itself in the course of acute forms and especially in the acute evolutionary stages of pulmonary tuberculosis.

In this respect no other chemical drug can actually be compared to it.

If we could summarize our thoughts in a short formula we would say that this drug represents a typical remedy—often efficacious for the evolutionary stages of pulmonary tuberculosis, arresting same and thus favoring the ultimate and partial retrocession of the lesions.

We do not believe that the drug possesses an anti-bacillary action; we rather have the impressions that it exerts its action on the tubercular lesions, at least in the lungs. Nevertheless, there are enough facts actually published for us not to deny the therapeutic virtue of this agent. Our own personal experience has firmly convinced us of this.

TUBERCULOSIS IN INFANTS AND CHILDREN

N. S. Zeitlin, M. D.
Assistant Roentgenologist, Cook County Hospital
CHICAGO

When one considers how much has been written on the subject of tuberculosis, one is surprised at the conflicting ideas that are still prevalent amongst the rank and file of our medical profession. We are not aiming to establish anything new in the following discussion, but we hope that by emphasizing certain features and by studying the large amount of material at our disposal we can stimulate a desire for more exact knowledge in those of us interested particularly in the subject of tuberculosis in infants and children.

The course of the pathology of tuberculosis depends to a great extent upon the tissue invaded. Since the physiology and structure of the infant chest differs from that of the adult, we can readily see why the course of the pathology in infants should differ so much from what is ordinarily seen in adults. Recently a very practical division of pulmonary tuberculosis was proposed by the well known authorities Petrusky and Ranky. These men suggested a division into primary, secondary and tertiary stages. A study of the different pathological processes of these stages is essential to the proper interpretation of the x-ray findings.

Due to the work of Ghon and Erdheim, it has been definitely established that in at least 80% of the cases the primary lesion is due to a bronchogenic infection by means of inhaled droplets. The most common location is in the periphery of the right middle or lower lobe. It must not be forgotten however, that this primary lesion called Ghon's focus may be found anywhere in the lungs. Puhl and Koch explain the peripheral predilection because these areas are more

aerated and thus more exposed to infected droplets.

After the tubercle bacilli reach the destined acini, they cause a reaction which really amounts to a miniature tuberculous pneumonia. This stage of exudation is usually missed in the x-ray and may be too small to be detected at autopsy. Later follows the stage of infiltration with the gathering of lymphocytes, and only then does the x-ray begin to show some hazy, indefinite shadows. After this comes the stage of necrosis and caseation with its still deeper x-ray shadows; and still later the stage of calcium deposition and reparative changes. As time goes on the shadow becomes more dense, smoother, smaller, and more acutely outlined in the x-ray due to the absorption of the exudate and the lymphocytes surrounding the calcium.

As with infections elsewhere in the body, so in the lungs the lymphatic channels and the glands draining the infected area become secondarily involved. And here too, the course runs through the stages mentioned above, thus, exudation, infiltration, caseation, calcium deposition, and absorption.

Depending upon the virulence of the infection, the resistance of the body, and the stage of the infection of the primary focus, the x-ray will show variable findings which can be interpreted correctly only by one familiar with the course of the pathology as mentioned above. Very early during the exudative stage, nothing can be seen. Later, when infiltration and caseation set in, the process is visualized and can then be followed to complete healing or to the secondary stage.

The advent of the secondary stage and its many different forms ushers in the difficulties in the differential diagnosis of tuberculosis in children. The secondary pathology results from the spread of infective material in the original focus in the lungs or from the originally infected gland in the hilum. Thus there are two types of secondary pathology, the caseating pneumonia of infants in the first year and the glandular tuberculosis seen in older children. Caseating pneumonia of infants of the first year results from rupture of a gland or lung focus into a bronchus or vein. The bronchus is the more frequently affected and leads to the disseminated caseous pneumonia with cavitation. This is always fatal. When the vein is eroded the tubercle bacilli are spread throughout the body causing miliary tuberculosis. If the secondary spread takes place in a child after the first year and up to puberty, the glandular type is apt to predominate. Here the glands of the hilum become secondarily involved from the originally infected gland, and both the symptom complex and the x-ray findings are entirely changed. The film now shows the typically enlarged mediastinum with the convex contours of the enlarged glands —the right side being more commonly enlarged.

There is one type of secondary pathology

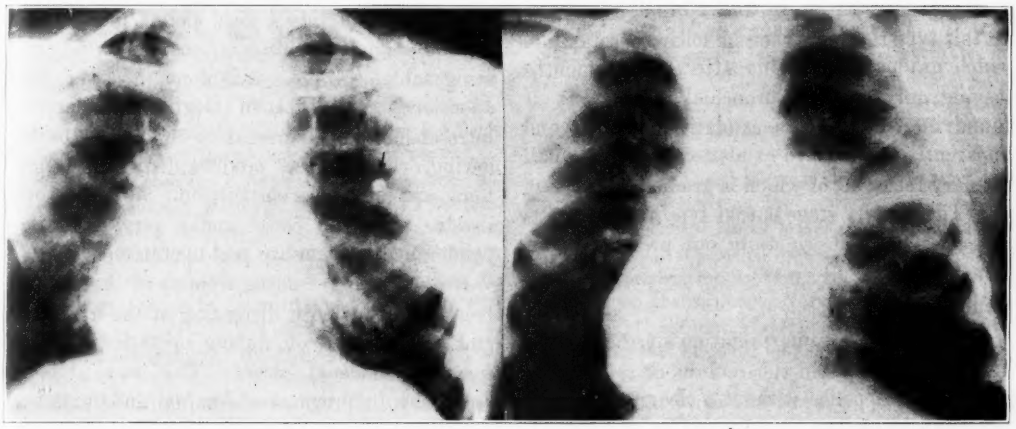


Fig. 1.
Note the sharply outlined round dense Ghon's focus in the right middle lung area and the associated calcified hilum glands.

Fig. 2.
Hilum Tuberculosis
Note the enlarged hilum glands, the intrapleural line, and the triangular pulmonary consolidation.

which seems to hold a place midway between the glandular and pneumonic types of tuberculosis. This is the so-called hilum tuberculosis, what the Germans call the intrapulmonary hilum tubercuosis and what the French call the "primitive triangle." The x-ray is typical and on close study shows three findings, thus: the enlarged hilum glands, a triangular shaped consolidation of varying size with base to hilum and apex to periphery, and the intrapleural line. These findings can be easily made out in the accompanying photograph. There is still considerable discussion as to the exact explanation of these findings, but there seems very little doubt that it indicates tuberculosis.

Still another atypical type of tuberculosis in children is that called epituberculosis. It was first noted by Eliasberg and Newland in 1920. In this type the x-ray shows a lobar consolidation which gradually clears up after several months leaving only enlarged bronchial glands. It is found in children with exudative diathesis and apparently is a marked exudation around a small primary focus, all of which is gradually absorbed.

The tertiary stage is that type seen in adults and does not concern us in our present discussion.

Conclusions:

1. A proper interpretation of the clinical and x-ray findings in tuberculosis of infants and chidren is impossibe without a clear understanding of the pathological processes.

2. The generalized acceptance of the division of tuberculous pathology into primary, secondary, and tertiary stages, would aid considerably in clarifying our ideas.

3. X-ray findings vary considerably depending upon the particular stage of the disease.

4. Cavity formation is frequent in infants of the first year.

5. Close cooperation between the roentgenologist and the clinician is often necessary in difficult cases which present themselves for differential diagnosis.

BIBLIOGRAPHY

Aschoff: Ueber cie Natuerlichen Heilungs Worgange bei der Lungenphthise 1921.

Assman: Roengendiagnostik—Third Edition.

Arch. Pediatrics, 43: 386, June, 1926.

Am. Rev. Tuberc., 13: 479, June, 1926.

Am. Rev. Tuberc., 14: 468 Oct. 1926.

55 E. Washington St.

OBSTRUCTION OF THE COLON BY POST-OPERATIVE ADHESIONS*

PAUL A. WHITE, M. D., M. S. in Surgery, F. A. C. S.

ARTHUR A. GARSIDE, M. S., M. D.

DAVENPORT, IOWA

Reports in the literature concerning obstruction of the colon by adhesions are meager. Many obscure abdominal complaints are explained to patients on the basis of adhesions. This diagnosis may often serve as a cloak for incomplete study or may be a defensive mechanism on the part of the physician in handling a neurasthenic patient. Surgeons of large experience have laid down the dictum that unless adhesions are producing obstruction they should not be disturbed. We have found this a good policy to follow in general diagnostic considerations and at the operating table. No one will deny, however, that adhesions, congenital in origin, secondary to intra-abdominal inflammatory conditions, or following operation may produce distressing symptoms and at times obstruction. Most of these involve the small bowel and a very great preponderance of them are post-operative.

Brugh[1] reports finding stenosis of the sigmoid from adhesions with distension of the ascending and transverse colon during operation for performing duodenal ulcer. This was probably secondary to previous abdominal inflammation.

Collins[2] reported finding at operation in several instances adhesions binding the transverse to the ascending colon and cecum producing angulation at the hepatic flexure and in the transverse colon. He applied the term "water trap" to this condition. Previous or present cholecystitis, appendicitis, or other abdominal inflammations seemed the etiological factor in these cases. He also reported finding post-operative adhesions binding the transverse to the ascending colon in one instance but the terminal ileum was also involved which may have largely accounted for the symptoms of obstruction.

We wish to make four case reports; one that we consider to have been volvulus of the sigmoid occurring postoperatively producing complete ob-

*From the Central Clinic, Davenport, Iowa. Read before the Association of Resident and ex-Resident Physicians of the Mayo Clinic, Rochester, Minn., October 8, 1929.

struction; one illustrating the production of the "water trap" situation described by Collins[2] due to previous intra-abdominal inflammation causing intermittant stoppage; one where post-operative adhesions held the terminal third of the transverse colon tightly to the upper end of a previous right rectus incision with marked constriction; and one where adhesions caused almost complete obstruction at the hepatic flexure following cholecystectomy.

1. Mrs. J. S., aged 44 years, had been operated upon five weeks previous to our first observation of her. The gall bladder with several stones and the appendix had been removed. She had been told on previous occasions during several years that her symptoms were due to gall stones. A few days before operation a plain roentgenogram showed calculi which for some reason the attending physician believed to be renal stones. A surgeon from a distant city made a lumbar exploration with the understanding that the gall bladder would be explored through an anterior incision if no stones were found in the kidney. This was done and the double procedure may have been a factor in her prolonged convalescence and marked debility. Many neurasthenic symptoms secondary to the menopause were present.

During the absence of the nurse she rose from the bed and presumably attempted to cross the room and was found a few minutes later on the floor. She and the nurse both stated that abdominal distension began at once and was definitely observed to ascend along the left abdomen, across to the right and soon became general. One of us (P. A. W.) saw her in a merely incidental manner, being in the hospital for another consultation five days after this episode. It was generally conceded by all in attendance that she would expire that night. The distension was extreme, with every evidence of impending collapse—clammy skin, thready pulse and marked prostration.

Exploration was advised and left lower rectus incision made under local anesthesia. The portion of the descending colon visualized was enormously distended, being 8-10 inches in diameter. Fearing to manipulate it in any way or even to insert a hand for exploration, a trocar was inserted releasing a rush of gas and collapsing the bowel. The trocar was removed and a catheter inserted, held in place by a purse string of silk. The edge of the peritoneum was sutured about a knuckle of the bowel and the wound closed with an additional Penrose drain down to the peritoneum. A few days later the wound fell apart and bowel contents bathed it freely. However, the bowels soon began to move normally and there was no further complication in convalescence. A small fecal fistula was closed by burying a radium needle in it two years later.

2. Dr. A. S., dentist, aged 44 years, was operated upon by us Sept. 26, 1929, under the diagnosis of acute appendicitis. He had a severe attack of right abdominal pain during the previous night, vomited several times, ate no breakfast or lunch and came to our office at 2:00 P. M. He described his pain as covering the upper and right portion of the abdomen. His tenderness was rather diffuse on the right side. There were no urinary symptoms and urine examination was negative. Blood count showed 24,000 leucocytes. The temperature was 102°. Physical examination in other respects was negative. He had taken a cathartic and two or three enemas so his preparation for a plain x-ray film was fair but it showed nothing. He had experienced several similar attacks during the previous two years and often had distressing attacks of flatulence after meals, considerable distension between meals or at night. The former were relieved by vomiting, the latter by enemas.

At operation, a long atrophic moderately inflamed appendix covered with adhesions was found and removed. This seemed insufficient to account for the symptoms presented. Further exploration showed marked inflammatory reaction along the ascending colon which was covered with a veil of adhesions. On separating them the transverse colon was found bound tightly to the ascending colon down to the cecum and up to the hepatic flexure with sharp angulation at the latter point, and in the transverse colon near the cecum. The adhesions were cut and tied, raw areas covered and the parts separated up to the hepatic flexure. He feels no more flatulence or cramping after meals and his recovery has been uneventful.

3. Miss A. S., aged 29 years, spent two years in a nurse's training school a few years ago, was a morphine addict, and presented herself for consideration of a post-operative abdominal sinus, April 20, 1929. She had an appendectomy in 1923 and an exploration for partial bowel obstruction in November, 1927, both elsewhere. The surgeon performing the last operation stated to us that he found nothing but a few post-operative adhesions.

Physical examination was negative. Blood, urine and Wassermann were negative, as was x-ray of the chest. X-ray examination of the colon, which might have been illuminating in the light of subsequent findings, was not done. There was an abdominal scar in the right rectus region about equally above and below the umbilicus. Leading from the lower end of the incision, three inches below the umbilicus a sinus extended across the abdomen to the left for four inches and presented a second opening. Probing showed no intra-abdominal communication and bismuth injection with roentgenogram showed it to be superficial with no ramifications. She had had some gaseous eructations but no bloating. In July, 1928, nine months after the last operation, the scar became reddened, then drained but healed in two weeks. In September, 1928, and February, 1929, this process was repeated and the sinus had not healed since the last drainage.

On May 9, 1929, the sinus tract was excised. It was entirely in the fat and well above the fascia, running subcutaneously. She did well for several days after the operation when distension occurred followed by vomiting unrelieved by enemas or gastric lavage. May 16, 1929, the abdomen was opened through the old right rectus incision. The right two-thirds of the transverse

colon, the ascending colon and two meters of the ileum were distended. Examination revealed the descending colon and sigmoid collapsed. The transverse colon was enmeshed in a mass formed by the gastro-colic and great omentum. This mass was adherent to the upper angle of the old wound in such a way as to make an angulation and half twist of the transverse colon. Freeing of the adhesions was followed by collapse of the proximal bowel areas. Her recovery was uneventful and her subsequent course has been normal except for persistence of a sinus in lower angle of the wound. This failed to heal after two months and we believed its cause to be factitial. She has been operated upon elsewhere for this condition.

4. Mrs. J. B. C., aged 34 years, was operated upon by us July 1, 1927, when cholecystectomy and appendectomy were done. The appendix was subacutely inflamed, the gall bladder thick-walled with no stones but adherent to the duodenum throughout its length. Recovery was without incident. She was seen after an interval of eight months, March, 1928, regarding a sore throat with no other complaints. On the night of December 19, 1929, seventeen months after her operation she was observed in an attack of acute abdominal pain with distension, vomiting, and diffuse tenderness more pronounced along the right side. She told of having had increasing constipation, recurring cramp-like seizures, and abdominal distension during the past three months. These symptoms were less pronounced at times and worse at other times. They had culminated in this attack which had continued with increasing intensity throughout the day.

The pain, while constant, was intensified in intermittent cramp-like seizures which were unrelieved by repeated injections of morphine. A hollow gurgling sound with a metallic tinkle and rush of gas characteristic of bowel obstruction could be heard over the abdomen with the stethoscope. Immediate operation was insisted upon but refused. She continued with considerable pain and distension for three days but was gradually relieved. Considerable blood was passed in the stools on the second and third days.

Nine days later, December 28, she experienced another attack of pain but this was located in the right lumbar region, radiating along the right iliac fossa into the thigh. Pus, blood, and bacteria were found in the urine. Temperature was 101°, white blood cells 13,000. Cystoscopic examination revealed pus, blood, and colon bacilli in the right kidney specimen. The urine from the left side was clear. The catheter remained in the right kidney pelvis twenty-four hours for drainage, being irrigated every three hours with boric solution while mercurochrome was instilled at eight-hour intervals. The kidney infection subsided and the urine gradually became normal during the next month. March 27, 1929, over three months after the first seizure, the patient experienced another attack of pain with distension and vomiting, not as severe as formerly but enough to convince her that operation was necessary.

Operation March 28, 1929, through the former right rectus incision disclosed a dilated ascending colon and cecum and collapsed transverse colon. A band of adhesions slightly proximal to the hepatic flexure extended across the top and around to the under side of the colon arising deep in the liver fossa. As these contracted the colon was gradually rolled upward and outward then downward compressing it into the old gall bladder bed making an angulation with almost complete obstruction. Cutting this band freed the bowel and its contents. The patient has had no further trouble. The acute pyelitis with colon bacillus infection developing in the right kidney immediately after the first severe obstruction at the hepatic flexure was of especial interest.

Summary: 1. The colon is rarely obstructed by adhesions. Congenital bands, intra-abdominal inflammation, and post-operative adhesions may cause partial or complete obstruction.

2. Great caution should be observed in attributing obscure abdominal symptoms to adhesions. Patients grasp this diagnosis readily and may be led into much meddlesome unnecessary surgery.

3. Four case reports are made: 1, obstructing volculus of the sigmoid; 2, obstruction of the transverse colon by adhesions secondary to inflammation in other abdominal organs; 3, two cases of obstruction of the colon by post-operative adhesions. In one of the latter cases acute pyelitis with colon bacillus infection developed in the right kidney following a seizure with obstruction at the hepatic flexure.

REFERENCES

1. Brugh, Ben F.: Perforated Duodenal Ulcer with Obstruction of Sigmoid Flexure. The West V. Med. Journal, Vol. xxiii, No. 7, p. 364.

2. Collins, Foster K.: The Ascending Colon; Non-malignant Abnormalities and Constricting Bands. Calif. and West. Med., Vol. xxviii, No. 2, pp. 179-82.

MODERN THERAPY OF CORNEAL INFECTIONS*†

SANFORD R. GIFFORD, M. D., F. A. C. S.

CHICAGO

The most important step in the treatment of corneal infections is, of course, their prevention. There can be no doubt that 80% of severe corneal infections could be prevented by attention to only two things. These are the proper care of foreign bodies on the cornea and the cure of chronic infections of the lacrymal sac. It is true that such care is often made impossible by the neglect of patients who do not consult us until

*From the Department of Ophthalmology, Northwestern University Medical School, Chicago.

†Read before the Eye, Ear, Nose and Throat Section of the Illinois Medical Society, May, 1930.

infection is under way, or who refuse to consider having anything done for an old infected sac. Perhaps some of us, however, are a little apt to minimize the danger of infection from such a sac until it has already occurred. We know that nearly all cases of chronic dacryocystitis harbor pneumococci or streptococci in their sacs, and that the slightest injury to the vascular cornea in the presence of these organisms, is apt to develop into a severe serpent ulcer. I believe we should consider such infections as serious as a chronic otitis media and advise our patients to take steps accordingly. For one thing they are much easier to cure then are the chronic running ears. In some cases, especially in young people, it is worth trying to probe the duct or if this is impossible, to make a new opening into the nose by one or another method. In a larger number however, the only thing to do is to remove the sac, or, following the simple procedure described by my father, Dr. Harold Gifford, destroy its mucous membrane with trichloracetic acid. Either of these procedures should give practically 100% of good results. Some lacrymation remains, but it is never as severe as when the infection was present. While this will probably prevent 20% of the more severe forms of serpent ulcer, we must remember that the normal conjunctiva is never sterile and that in 5 to 15% of persons, members of the pneumo-streptococcus group are present on the perfectly normal-appearing conjunctiva. Hence a foreign body, besides the bacteria which it may carry in, may open the way for such organisms to invade the cornea. The type of foreign body which most often carries infection into the cornea is a fragment of wood, stone or dirt, while metallic foreign bodies or cinders, usually sterile themselves, leave small areas of necrosis which are perfectly adapted for the growth of conjunctival organisms.

In removing foreign bodies, good anesthesia is essential, and 2% butyn or holocaine will secure this without damage to the corneal epithelium. The foreign body should be lifted out of its bed by a sterile spud which is not too sharp. It should be completely removed with the minimum of traumatism to the cornea, for which good light and a binocular loupe are often necessary. The conjunctival sac should be washed well with boric acid and a few drops of a somewhat stronger antiseptic, such as 2% mercurochrome, should be instilled. I believe it is important then to always prescribe a mild collyrium such as a saturated solution of boric acid, to use frequently during the next 2 days after a foreign body has been removed, if the corneal epithelium has been broken, to minimize the chances of infection. As in such cases there is nearly always some pain for several hours, the addition of 2 grains of butyn per ounce to the drops is appreciated by the patient. We should really see every patient who has had an imbedded foreign body removed on the following day. This is the only rule which will absolutely protect the patient from the development of a corneal infection without the surgeon's knowledge. It is a hard rule to get patients to observe, however, since at least 90% feel perfectly well the next day and will not be bothered by a visit to the doctor. I believe we are almost safe if we advise such patients to report if they have the slightest discomfort after 24 hours. The wound of a foreign body should always be healed by this time, and persistent discomfort usually means either the retention of some foreign material or a beginning infection, which may occur from the conjunctival sac after complete and impeccable removal of a foreign body.

The signs of infection will be congestion, pain, and a very small point of grey or yellowish infiltration. When this is present, it should be touched at once with a strong antiseptic. We all have our favorite, some preferring phenol, some nitric acid, some iodine. I prefer trichloracetic acid in most cases, and for two reasons. It leaves a white spot wherever it has touched, so that one always knows whether a satisfactory application has been made. It destroys bacteria and tissue within a very short distance of where it is applied, having no tendency to produce deep necrosis, as phenol or nitric acid may do. I use the pure crystals, to which one or two drops of water have been added so as to produce a thin syrup which is easy to apply. A convenient way to apply it is on a wisp of cotton wound on a pointed applicator and cut off to form a fine point. This should be tried on a finger nail to be sure an excess of acid is not present. If the infiltrate is deep or covered by soft exudate, a

hard applicator must be made, by winding a very small wisp of cotton tightly around a sharp pointed applicator.

If the infiltrate has been developing for several days when the patient is first seen, there will usually be considerable pain and congestion. In this case atropine and hot packs should be used from the beginning as for any corneal ulcer. If the condition does not seem severe enough to justify the use of atropine, homatropine may always be used to produce a temporary relief from ciliary spasm.

When we should apply the name serpent ulcer to such a condition is unimportant. Any corneal infiltrate which causes persistent pain and congestion and tends to spread deeply in the cornea contains pathogenic organisms, usually pneumococci or streptococci, and is a severe corneal infection, capable of compromising the entire globe. Such cases should be hospitalized when possible, chiefly so that we may not fail to see them every day. Where one or two applications such as above described have been made, and the infiltrate continues to spread, we must not hesitate to use more heroic measures. I believe nonspecific protein therapy will help us here in many cases. None of the milk preparations such as Aolan or Lactigen have given consistent reactions in my hands. If pasteurized milk is used, the bacterial content is apt to be so low that only slight reaction is produced, but if such milk is kept warm for several hours and then boiled 4 minutes, a good febrile reaction is often obtained. A typhoid vaccine, 30 to 60 million organisms given intra-venously, produces the most dependable reaction.

We may also vary our local antiseptic treatment, first by making it more thorough, getting well into the bottom and edges of the ulcer with a sharp hard applicator and second by changing the antiseptic. Tincture of iodine is very hard to apply but when made into a thick saturated syrup of iodine it is easy to apply and sometimes very effective. This is done by adding 5 drops of the tincture of iodine and 5 drops of glycerine to 10 grains of iodine crystals. Such a syrup may be applied very thoroughly to an ulcer, twice a day if necessary, without danger, although severe pain is often complained of following the treatments. Such applications should be made at least once a day and accompanied by plenty of atropine and hot packs.

In a large number of cases these measures will prove successful, especially if the infiltrate is seen early, and if so the congestion will decrease, the pupil will dilate easily and the pain will disappear. Any increase of pain or congestion, or the resistance of the pupil to atropine usually means further progress of the infection. In such cases, besides repeating our foreign protein in increased dosage, we must treat the local infection more radically. This is where the actual cautery was, and in some hands, still is used to actually burn away completely the site of infection. This leaves very dense scars, and I believe can be avoided in most cases by prompt enough opening of the anterior chamber. My father, Dr. Harold Gifford, reported on the value of this procedure years ago, and on a method of making the opening which he called delimiting keratotomy. Opening the chamber is done with the idea that removing the aqueous will remove the tension from the avascular cornea, allowing more lymph and antibodies to penetrate it from the limbus. Where the ulcer is small, such an opening may be made from the limbus. Delimiting keratotomy is a cut made with a very sharp thin Graefe knife tangential to the ulcer, along its advancing or central border, and extending beyond the widest part of the ulcer at either end. It is a perfectly safe procedure if done under good illumination with a good fixation of the globe, the knife being held parallel to the surface of the cornea as soon as it has penetrated so as not to wound the lens. Its advantages are that it may be re-opened once or twice a day by simply touching one edge of the wound with any sharp instrument till the chamber empties. The only precaution necessary is a good light so as to be sure that the chamber is not already empty. This re-opening of the chamber should be kept up for 3 to 6 days or longer, until the ulcer shows definite signs of regression. If the wound tends to close too quickly after each reopening of the ulcer or if the ulcer does not stop its progress, it may be necessary to puncture the thinnest part of the ulcer with a fine cautery point as such a round opening will remain open for several days. Whether, as my father thought, the

growth of epithelium into the wound acts as a barrier to infection, or whether it acts purely by the relief of tension, the effect of the procedure on the healing of all but the most advanced ulcers is unmistakable, and will be borne out by anyone who has tried it, or has observed the healing of an ulcer after spontaneous perforation.

Most corneal ulcers which follow injury are, as stated before, serpent ulcers of one degree or another. Of the other types of ulcer the herpetic or dendritic ulcer is probably the most common. This is now known to be caused by the virus of herpes simplex, which causes herpes of the lip and genitalia. While it often occurs during a febrile disease, such as malaria or pneumonia, it often occurs also without any apparent cause, just as herpes of the lip is known to do, or after a slight injury, and we must assume that certain people are carriers of the virus. These ulcers, while not always assuming the characteristic branching dendritic shape, are alike in their tendency to spread superficially over the cornea, without involving the deeper layers, never causing perforation. One or two applications of the iodine syrup just described may abort such an ulcer, if it is seen early. Others are much more obstinate, and may cover practically the whole cornea. In this type of ulcer, I believe delimiting keratotomy is not indicated as it may carry the virus into the deeper layers of the cornea. Paracentesis at the limbus avoids this danger, and would theoretically be of benefit. Since we have been using ultra-violet light, however, it has not been necessary to perform paracentesis. This condition is the one in which most benefit is seen from ultra-violet light, as the layer of opaque cornea is so thin that the short rays can reach the site of infection. In serpent ulcers it is much more difficult to obtain an effect since the rays are absorbed before reaching the deeper layers. I have used the uviol light of Birch-Hirschfeld for 8 to 10 minutes daily in these cases, repeating the treatment daily for 3 to 6 days. With this, there is no danger of damaging the corneal epithelium, while the water-cooled mercury arc lamp, with which much more light can be delivered, must be used with great care, beginning with only 30 seconds and for this special applicators are necessary. With the recurring herpetic ulcers, I have seen some apparent benefit from removing pathologic dental roots or infected tonsils, and from cleaning up sinusitis. This may be effective by building up general resistance or it is possible that the virus itself actually lodges in such foci and is removed with them. I have never seen one of these ulcers occur following a foreign protein reaction, but am expecting to as they have been reported to occur occasionally after typhoid vaccine.

Mooren's ulcer, or rodent ulcer, is a rare form of corneal infection. This is fortunate since it nearly always, in spite of treatment, covers the whole cornea. It begins at the limbus and progresses both centrally and around the limbus, healing in one place as it progresses at another. I have seen one of these ulcers heal after a delimiting keratotomy which was kept open for over a week, and another after covering the ulcer with a sliding conjunctival flap. The flap, which was left in place, did not produce too good a cosmetic effect, but good vision was retained. Another form of corneal infection, the treatment for which is almost equally discouraging, is the smallpox infiltrate. These are not so common now as in the pre-vaccination days when they formed one of the most important causes of blindness. I am told this is still the case in some parts of the Orient. This type of lesion usually comes on during the stage of eruption, but instead of clearing up with the skin lesions, it goes on with a sluggish progress through the cornea. The only form of treatment I have seen affect these lesions favorably is keratotomy, the chamber being kept open for one to two entire weeks. I have seen it fail entirely, however, and I believe the most important thing to do on first seeing such a case is to give the prognosis for a long illness, with very doubtful outcome.

In conclusion, I would hope simply to have emphasized to your minds the need of taking every precaution to avoid corneal infections, and to have given you what I consider a reasonable and effective routine of treatment when such infections do occur. They are emergencies of the most urgent kind. In most cases, prompt and energetic action will be rewarded, and in the others it is good to feel that everything in our power has been done.

58 E. Washington Street.

NERVE ANASTOMOSIS FOR THE RELIEF OF FACIAL PARALYSIS

ALFRED BROWN, M. D.
OMAHA, NEBRASKA

It is my purpose to bring before you the results which are possible to obtain in nerve transplantation in paralysis of the facial nerve and to call to your attention particularly the three criteria by which results should be evaluated according to Frazier and Spiller.

First, to bring back tonicity to the muscles and restore normal contour of the face.

Second, to bring back mass motion of the muscles of the face.

Third, to bring back emotional control of facial movement.

Working alone these lines, I have selected as the type of transplantation to be used the suture of the proximal stump of the hypoglossal nerve to the distal stump of the facial which has been divided close to the stylomastoid foramen, in order to obviate as much as possible the occurrence of motion in the face imparted by the attempted action of the vital nerve. I have used the descendens hypoglossi which supplies a few muscles in the neck and shoulder, which do not amount to much, to anastomose with the stump of the hypoglossal which has been paralyzed by the operative procedure in order to restore motion to the tongue and obviate the motion of the face when an effort is made to use the tongue. This has apparently been successful in getting rid of the extraneous associated movements which occur commonly with anastomoses in which other nerves are used.

(Motion pictures to illustrate the points to which attention has been called.)

OSSEOUS DYSTROPHIES*

E. L. JENKINSON, M. D.,
CHICAGO

The very excellent paper by Dr. I. Seth Hirsch, read before the Radiological Society of North America in December, 1928, has done much to clear up some of the obscure points of diagnosis and classification of fibrocystic and allied diseases. Since Hirsch published his very thorough paper, which is a complete review of the literature, much interest in these diseases has been manifested by frequent articles in medical journals. It is evident in the face of these works, I am going to add very little to your fund of information.

I am quite sure that if we review our cases of fibrocystic and osteitis deformans, we will come to the conclusion that it is impossible to classify these patients into frank cases of either disease.

As Kaufman has said fibrocystic and osteitis deformans are anatomically and histologically the same. They are different stages of the same disease.

It has been the desire of many writers in the past to try and find a sign or signs both clinically and roentgenologically that will definitely differentiate these diseases. This fact is borne out by the complicated classification of many writers. Various stages of the diseases are classified as distinct entities, for example, leontiasis ossea.

I think we can all agree that these diseases should be classified under the malacias, such as rickets, osteomalacia, epulis, bone cysts, etc.

The etiology is still a matter of speculation.

Infection has been placed first by many writers as a cause. Others claim heredity plays a big part, or perhaps the most important part in the cause of the diseases, while others are just as emphatic in their arguments that trauma, endocrine disturbance and diet are the causes of these osseous dystrophies. In Vienna following the war, changes were produced in the bones, following starvation, that were certainly suggestive of fibrocystic disease. Hirsch in his article shows quite conclusively that there are familial characteristics in many of his cases. It is not uncommon to find the mother of the patient show peculiar deformities of the face. On radiographic examination definite bony changes are identified which can be classified under the osseous dystrophies. Our experience certainly substantiates Hirsch's belief. Several of our cases have given definite histories of their ancestors having deformities quite like their own. These deformities were recognized by the patient as only a family characteristic. Recently the dysfunction of the parathyroids have been given

*Read before Section on Radiology, Illinois State Medical Meeting, May 21, 1930.

as a cause of fibro-cystic diseases. Much work has been done on blood calcium but in most instances it was found to be within normal limits. Probably more important than blood calcium is the urinary calcium. We are aware that there is considerable speculation regarding what is the normal urinary calcium. In looking over many articles we have decided that somewhere between .33 to .80 grams is the normal daily output of calcium in the urine.

In our work we have found certain changes in urinary calcium, which may be of some value from a diagnostic standpoint.

The work has been carefully directed by Dr. J. L. Miller. Dr. Miller is quite sure the variation in the urinary calcium is of great diagnostic value. In a recent case of osteo-malacia, a female aged 45, with typical x-ray findings, the blood calcium was around 7, which is very low. The urinary calcium in the patient was very high. This was interpreted as meaning the calcium, instead of being deposited as it usually is, in the bone, was being expelled in large amounts in the urine. In other words there was some disturbance in calcium metabolism. On Viosterol this patient has improved clinically, her blood calcium has increased and her urinary calcium decreased. After six or eight weeks she will be examined radiographically and the films compared to determine whether there has been an increase in the deposition of calcium in the bones.

The disturbance of the calcium metabolism cannot be taken as a definite differential diagnostic sign in fibrocystic and osteitis deformans. We have observed patients, showing very dense bones with the blood calcium normal, and the urinary calcium higher than normal, or even normal.

If the findings were of great diagnostic importance in the presence of very dense bone, the urinary calcium should be low. If the fibrocystic changes predominate the urinary calcium should be high. This however, is not always the case.

On all our cases at St. Luke's we are spending a great deal of time working on these points in ricketts, osteomalosis, fibrocystic and Paget's. Possibly we may find something of definite value in the progress of our work. Recenty the literature has contained numerous articles relating to the calcium and phosphorus metabolism. There have also appeared articles dealing with the parathyroids and their affect on calcium metabolism and finally bone development.

In the February 20, 1930, Journal & Clinical Investigation, Baltimore, R. R. Hannon et al, p. 215, and W. Nauer et al p. 229, published articles dealing with osteitis fibrosa cystica, with evidence of hyperactivity of parathyroid. Hanon et al arrived at the conclusions that hyperactivity of the parathyroids was the cause of osteitis fibrosa cystica.

The calcium, phosphorus and nitrogen metabolism in the Hannon et al case were studied by Bauer et al. The patient's negative calcium balance on low calcium diet was markedly increased over that found in normal controls. The increase was due to an increased urinary calcium excretion. The fecal calcium excretion was less than normal. On high calcium diet the urinary calcium was not increased and the patient remained in calcium balance. The calcium abnormalities were unaffected by the removal of two apparently normal parathyroids. Because the pathologic physiology in their case is similar to that in an individual receiving large doses of parathyroid extract, and diametrically opposite to that in a patient with parathyroid tetany, they feel justified in concurring in the diagnosis of hyperparathyroidism. They feel a high phosphorus diet might be more efficacious from a therapeutic standpoint than a high calcium diet. McClellan and Hannon report calcium and phosphorus balances on their case for 154 days. They found an intake of 1 gram of calcium necessary to keep the patient in positive calcium balance. The positive calcium can be increased by increasing the intake. The use of cod liver oil and of quartz lamp produced no benefit. Certain extracts were used, such as thyroid and pituitrin, which increased the amount of calcium retained. Increasing calcium did not increase the urinary calcium but giving thyroid extract caused an increase.

Fecal excretion of calcium increased with the calcium intake and the giving of pituitary extract further increased the fecal output.

The intake or the addition of glandular extracts caused no affect in the urinary phosphorus. Phosphorus in the feces varied with the intake.

A positive phosphorus balance was maintained

well during periods in which there was a definite loss of calcium from the body.

The removal of two parathyroids caused only slight changes in the levels of serum, calcium and phosphorus, and no change in basal metabolism.

Higgins and Sheard (Am. J. Physiology, 85 : 299, June, 1928) have shown that checks under light from which vital rays have been removed invariably show a hyperplasia of the parathyroids. There is an abundance of material showing a close relationship between the parathyroid glands and calcium metabolism. The calcium level in the blood can be increased by the injection of active preparations of the hormone of the parathyroids. These preparations are used in the treatment of rickets, which, like fibrocystic and Paget's is a malacia.

The overgrowth of the parathyroids can be overcome by irradiation with ultra violet or by giving cod liver oil. A. F. Morgan and E. A. Garrison (Journal Biol. Chem. 85 : 687, February, 1930), found when giving viosterol and parathyroid in combination extremely high concentrations of serum calcium followed. These two agents may act in combination and may be directly interrelated and, as an antirachitic agent, may be efficacious especially in glandular deficiency.

In the Indian Journal Medical Research, 17, January, 1930, p. 889, D. C. Wilson and E. Surie (Dietary Factors in Etiology of Osteomalacia) report the findings of 265 cases of osteomalacia (late rickets). They report a consistent lack of vitamin D in the diet of these patients. They also believe want of sunlight plays an important part in the etiology.

Sunlight is a very important source of Vitamin D, especially in the absence of a well balanced diet. Osteomalacia is very prevalent in India, especially in those who observe purdah. The amount of calcium and phosphorus in the diet was usually adequate. Late rickets and osteomalacia were observed in men and boys, not unlike those observed during and following the Great War, due to hunger.

Excessive cereals plays some part in making the condition worse. Fresh food is important to bring about improvement. The addition of sunlight helps greatly.

From our experience, based on many cases, we are of the opinion that patients suffering from osseous dystrophy have had the disease for many years. It is our opinion that the disease starts early in life, usually the fibrocystic type predominating. The long tube bones are most frequently attacked, later the skull, pelvis, spine and ribs may become involved. Frequently the bones of the face are involved and this calls the patient's attention to the disease.

As the disease progresses there will be hyperostitic changes, new bone being found not in a normal systematic manner, but in rather dense bands.

Von Ricklinghausen in 1891, described the disease bearing his name, he also included Paget's disease under the same classification, metaplastic malacias. Even from his description, one would infer he thought the diseases were closely allied and difficult to differentiate—Paget's disease is classified as hyperostitic metaplastic malacia, and osteitis fibrosa as simple metaplastic malacia. The fibrocystic in its early stage, showing a predominance of cystic changes while the Paget's disease shows a predominance of bony deposits. It is rather uncommon to find a patient with only the changes of one type or stage of the disease.

Fibro cystic occurs in early life, while Paget's is chronic and occurs in adut life.

The character and the severity of the symptoms are not constant. Some patients have severe pain while others have no complaints. If there are large cystic areas that press on the periosteum and surrounding tissues, pain usually follows.

We have seen a number of people come to the clinic, where the disease was discovered accidentally on x-ray examination. Probably the most descriptive classification is the one suggested by Garland.

Type in which Porosis predominates.
Generalised—Osteitis Fibrosa Cystica.
Localised { Multilocular Bone Cysts. / Epulis. / Leontiasis ossea.
Circumscribed { Salitary—Bone cysts. / Central Fibromas
Type in which Hyperstosis predominates:
Generalised—Pagets.
Localised—Monosteal Ostitis Deformans.

The classification shows the disease may show two or more types of changes, and also the diseases may be generalized or localized.

The localized changes may cause symptoms and on x-ray examination a definite cystic area be found. The diagnosis may be a localized bone cyst. These patients should always be thoroughly examined and often a generalized fibrocystic disease is discovered. It is always advisable to do a complete Roentgen examination. Cystic changes may be found in the long bones while the skull may show definite hyperostitic changes.

Peculiar distribution of the disease is often encountered which may have some bearing on the cause or etiology of the disease. Often the left half of the pelvis may show extensive hyperostitic changes, while the other half will be normal. The proximal third of the femur on the affected side will be normal while the proximal third of the femur on the normal side of the pelvis will show extensive involvement.

Pathology: The conditions appear to be quite similar and related. They vary only in the matter of degree. The prominent changes have to do with bone resorption and bone apposition followed by bone softening. If bone apposition does not follow bone resorption a poroses follows; later bone reparation follows, the apposition is not in normal order and patchy areas of osteo sclerosis and poroses results.

Malignant changes have been reported complicating osseous dystrophies. These changes are not common, as Lewald reported many cases followed over a period of years with only a very small incidence of malignancies developing. We have had one case operated upon and the pathologist reported the lesion as a malignant sarcoma. This patient had been curetted before, possibly the trauma caused malignant changes to follow.

That there is the chance of error in making a diagnosis of sarcoma is concurred in by many writers. The fibroblasts may well be called spindle cells and the osteoblasts called round cells, thereby giving an erroneous diagnosis.

The x-ray findings in osseous dystrophies are of great diagnostic value. The absolute differentiation of the diseases we believe, is impossible and also of no great importance.

A general rule may be applied as follows. In all young patients the bony changes can be called, and usually are, of the porotic type, under this heading are the fibro-cystic changes. The bones, usually the long tube bones, are cystic, showing areas of rarefaction large and small, circular in outline. The changes are usually located near the metaphysis. The cortex is thinned but intact, except in the presence of fractures, which do occur. The union following fractures is rather slow, but does occur. Often there is very little deformity due to muscle weakness.

Always examine the entire osseous system, especially the tubular bones, pelvis and skull. Porotic changes may be present, while in the skull hyperostitic changes predominate. The diploe is thickened and occasionally the internal table is thickened and irregular. There may be irregular areas of hyperostosis in the bones of the skull, especially the frontal may be eburnated, hence leontiasis ossea.

It is not uncommon to find localized cystic changes in the ends of tubular bones and in the face. As the patient grows older the disease may change and take on hyperostitic changes. The trabeculae become thickened in bundle formation. The cortex becomes thickened and the shaft widened. The widening is especially noticeable in the upper portions of the femora. In the tibia there often develops a marked anterior bowing. The tibia seems to be elongated—occasionally cystic areas are still present and may become large and invade the cortex.

The so-called Paget's changes which occur in the later stages of the disease and during later adult life, show the hyperostitic changes. The trabeculae and the bones become thickened. The shaft becomes widened. The pelvis will show considerable thickening of the bone, not unlike a low grade osteitis. The pelvis is usually deformed, due to the softening which has occurred years before. The x-ray findings are quite typical and there are very few diseases with which they will be confused. Occasionally cancer of prostate will cause metastatic changes which may be suggestive.

DISCUSSION

Dr. C. H. Warfield, Chicago: This has been a very interesting subject because the roentgenologist plays the most important part in the diagnosis of this condition. There are many cases in which the diagnosis is not made since there is no clinical manifestations. If you x-ray the skull and find the typical appearances of osteitis you should x-ray the femur and tibia, since this is a common location of the generalized process. This one case was rather amazing to all because they did not suspect he had it.

INJURIES TO THE SPINE AS RELATED TO ARTHRITIS*

SUMNER N. MILLER, M. D.
PEORIA, ILL.

In the consideration of injuries to the back, there is a type of injury other than those involving damage to the bony framework, which, while usually temporary, result in stiff and painful backs with permanent disability of a degree quite disproportionate to the provoking cause, in individuals of a certain type of spine. They result from wrenches and strains, hyperextension or hyperflexion, sometimes from direct trauma. Inasmuch as they belong to the class of injuries from which recovery ensues in a reasonable period of time, special thought or attention is not given to them until a prolonged disability leads to more searching examinations.

X-ray then discloses hypertrophic bone changes of the spine sharpened edges of the bodies, lipping, spur formation, and often ankylosis through the fusion of spurs of adjacent bodies or interlocking of spurs: The various degrees of structural bone formation known as hypertrophic arthritis. These bony outgrowths have been present for many years but have not been the source of pain or discomfort until an injury has occurred. Then they never cease to be a source of pain and disability.

I have made an analysis of x-ray plates taken serially in 1928-1929, in which the vertebrae are shown. The plates were taken chiefly for G. I. & G. U. studies, Graham tests and for injuries. Only the plates of those cases were included in which painful backs were not a complaint. The spine findings were incidentally found and were noted casually in the x-ray report, not being germane to the purpose for which the x-ray examinations were made. The analysis was made to determine the incidence of hypertrophic bone changes in relation to age and occupation. 478 x-ray plates of the vertebrae were examined, of which 78 or 16.3% showed symptomless hypertrophic changes of the spine. 202 of the series were women, 25 or 12.5% of whom showed such changes as compared with 53 cases in 276 men, or 19.8%. Of 147 women under the age of 50, 3 or 2.04% showed changes, while in 55 plates of women above the age of 50, there were 22 or 40% with changes. Of 176 plates of men under the age of 50, 14 or 8% had hypertrophic changes, the earliest being at age 34. Beyond the age of 50, 38 or 38% of 100 plates examined showed hypertrophic changes, four only occurring under the age of 40.

The series was classified by occupations, which were divided into two groups—active and sedentary. Those of active occupation included miners, farmers, railway employes, steel workers, machinists, carpenters, chauffers and truck drivers. Those of sedentary occupation were chiefly clerks and salesmen, business and professional men. Of the latter group of 74 cases but 1 showed hypertrophic changes in the spine.

Of 100 men in the active group below the age of 50, 14% were affected, while of 89 such individuals ranging above 50 years of age, 38 or 42.7% showed spine involvement, while 62.2% of all above the age of 60 were so affected.

Active group—men

age	no. examined	bone changes	per cent
21-30	23	none	...
31-40	68	3	5.5
41-50	65	11	21
51-60	56	15	35.7
61 on	44	23	62.2
Sedentary group	74	1 age 35	

The lumbar region was most involved, being affected in 51.4% of the women and 59.4% of the men. The remainder involving the thoracic vertebrae and the pelvis, with occasional cervical involvement.

T. A. Willis (Journal of Bone and Joint Surgery, April, 1924) analyzed the hypertrophic changes found in the examination of 628 skeletons. The hypertrophies became manifest after the age of 35, appeared earlier and most marked in the spines of heavy individuals, and were present in almost all of the skeletons examined after the age of 50. (120 out of 123.)

J. D. Garvin (Archives of Surgery, July 1927) made a study of the hypertrophic changes of lumbar vertebrae disclosed in the plates made for examinations of the genito-urinary tract, at the Mayo Clinic. The spines of 67% of the men and 40% of the women above the age of 50 were affected, about 30% of whom experienced back manifestations while 74% of the men and 61% of the women having such backs had no symptoms referable to them.

In general, it is evident that chronic hypertrophic bone growth occurs in the spines of a large proportion of all individuals, particularly

*Read before Section on Surgery, Illinois State Medical Meeting, May 20, 1930.

in those engaged in occupations requiring much muscular effort, occurring first around 35 years of age, developing progressively and becoming more marked with advancing age and involving chiefly the lumbar region. While these bone changes are designated hypertrophic arthritis, it is debatable whether the presence of symptomless hypertrophic bone growth constitutes an arthritis; whether a painless back is to be designated as rheumatism by reason of x-ray findings. Arthritis is a disease, not something seen in x-ray plates.

Focal infections are factors in the production of arthritis, and foci of infection are prevalent centering around the teeth commonly, in most of the group of affected individuals. The marked preference for these changes in older individuals of active occupation in contrast to their lesser incidence in men of sedentary occupation is too striking to be explained on the basis of infectious arthritis. While focal infections as factors cannot be excluded, the changes are largely physiological hypertrophies of definite relation to age and occupation, a response to the habitual activities of the affected individual. Muscular and ligamentous stress and strain over long periods of time are major factors in their production.

George and Leonard (Radiology, 1924) characterized them as "Chronological Occupational and Postural changes." "The vertebra change in appearance with advancing age, particularly in the laboring man who does heavy lifting. His vertebrae will differ in appearance from that of sedentary occupation. These changes are many times confused with those due to injury or disease. They are normal in relation to age, occupation and posture of the individual."

However, the question whether these are pathological changes — arthritis, or are physiological work hypertrophy is largely of academic interest, except that, particularly in compensation cases. The term arthritis should be reserved for those who show clinical evidence of rheumatism before injuries have been incurred. Moreover, it should be recognized that lipping, spur formation and the like require years for their formation and that they are not the resut of a single recent injury. The changes occur along the edges of the vertebrae and follow the attachments and course of ligaments which become sclerosed and calcified paralleling in age sequence the sclerosis and calcification of the arteries of the individual.

With advancing age and progressing sclerosis of bone and ligaments, diminished mobility and flexibility of the back appears. The lessened mobility of such a back coupled with its increased brittleness, increase its vulnerability to strains that force it beyond its limited range of motion. The important significance attached to such backs is, 1st—their susceptibility to injury —particularly from relatively slight trauma, and 2nd—the extent and duration of disability which is quite disproportionate to the cause. The greatest mobility of the spine is in the lumbar region and the lumbar region receives the greatest strain in muscular effort. Here, therefore, the hypertrophic changes are most frequent and here also the incidence of injury is greatest. The trauma are of three types: 1st—muscular and ligamentous strain in a back of limited mobility by reason of bony over-growth; 2nd — hyperextension and hyperflexion of such a back and less frequently, a direct trauma to a back the seat of these structural changes.

Bohart (Journal A. M. A. Vol. No. 92) X-rays the spine of all men before employment and considers that lipping and spur formation seem to be a sure indication that the individual will work but a short time until some sudden strain will produce a lumbago. A spine with sclerosis and calcified ligaments and bony changes at the edges of the vertebrae, limiting motion, or so engaging as to lock and dovetail each other, is obviousy more easily injured than a spine that does not have such changes. It is structurally fragile and a potential source of injury with prolonged disability. The important thing in dealing with these injuries is to determine early whether they occur in individuals whose spines are the seat of such structural age and occupation changes. If not, recovery in a reasonable time can be expected to ensue; on the other hand, if the structural age changes are present it is essential that they be recognized at once as with ordinary methods of treatment — strapping of the back and ambulatory treatment, they become progressively worse and the individual gradually develops a permanent disability with a stiff and painful back. Certainly apparently minor injuries of the back occurring after 40 years of age should be subject to x-ray examination, that apart from the matter of injury of the bony

framework, the presence of physiological work hypertrophy may be determined.

Injuries involving the bony framework are recognized as serious lesions and are treated accordingly with immobilization etc., and good results are the rule. An unrecognized and untreated compression fracture will result in a chronic painful and disabling back. The results that follow the casual and indifferent methods of treatment of the type of spine under consideration are comparable to those that follow similar lines of treatment applied to compression fracture. A compression fracture well treated yields better results than these lesser injuries with inadequate treatment.

Early immobilization after injuries of backs showing structural changes, in the same manner that compression fractures are treated and over a long period of time may lessen the severity and permanence of the disability. It is therefore essential that they be x-rayed immediately that they may be identified, as late treatment is ineffectual. However, even when early and adequate immobilization is applied many of these individuals do not fully recover the use of the back. In long standing cases of painful backs of this class with the prospect of permanence of disability, fixation operations designed to cause bony ankylosis of the affected vertebrae, will alleviate the manifestations and may enable the individual to perform some kind of light work.

CASE REPORTS

1. A railroad man, aged 52, was standing on step on front end of switch-engine. The step caught on a projecting plank at a crossing and was bent downward sliding him off in the path of the on-coming engine. He threw himself sideways to save himself from being run over and sustained a wrench of the back involving the lumbar region. He complained immediately of pain and was confined to the bed for six weeks. Pain persisted on movement thereafter and he has not worked since receipt of the injury five years ago. He received a substantial verdict from the Company on account of permanent disability. The x-ray discloses changes involving the 2nd to 5th lumber vertebrae. Lipping of lower margin of 2nd, flattening of the body of the 3rd with increased concavity of the sides of the body with a sharpened edge on one side and spur formation on the opposite side of upper margin. There is some involvement of the 4th. The localization of pain in the lower lumbar region coincides with the bone changes.

2. A farmer aged 70, while lifting a box of firewood, felt a sharp pain in the back which persisted, becoming progressively worse, causing complete disability. He did no work thereafter, lived three years and died of pneumonia a few months ago. X-ray showed spur formation on the adjacent margin of the 2nd and 3rd on one side and the adjacent margins of the 4th and 5th of the opposite side, there are hypertrophic changes in the sacro-iliac articulations. Spur formation reaching out toward each other from adjacent bodies is a common characteristic of chronological age changes in individuals engaged in heavy work. They following the course of the ligaments, often meeting and fusing, and result in complete stiffness of the affected bodies. Lateral view of the vertebrae show changes corresponding to those in the A & P plates. The change involves the entire rims of the margins, not alone the part seen in one plate.

3. On October 23, 1929, a telegraph lineman, aged 45, was standing in the caboose of a freight car. The train came to a sudden stop and he was thrown backward against a stove in sharp hyperextension. He experienced some pain which lasted a short time, thereafter he experienced pain on movement or exertion but continued working. The pain became progressively worse and after six weeks he was obliged to give up work for a few days and worked intermittently until Feb. 1, 1930. He then complained of constant dull aching pain in the lumbar region aggravated by movement. Tenderness to pressure was present over 4th and 5th lumbar spines and lumbo-sacral articulation with muscular rigidity. Motion was limited on account of pain. No foci of infection were found.. He was immobilized by a body cast for six weeks after which a brace was fitted. Pain subsided ten days after immobilization but he experienced occasional dull paid occurring spontaneously and if the brace was not worn, pain was present on movement. This gradually subsided, and he has returned to work after seven months' treatment.

X-ray plates: All the various gradations of work hypertrophies are seen in the plates of this case, all the vertebrae are involved. Flattening of the body of the 3rd, increased concavity of the sides and spurs reaching out for the adjacent side of the 3rd and 4th toward each other.

4. A miner, aged 59, was bending over. A gate descended upon him, he threw up his right hand to support the heavy gate and protect his back, twisting himself sideways, and felt a sudden crack and pain in his back. He worked a few days and gave up, has not worked for two years on account of persistent painful back and is receiving compensation for total disability. The wrench was received with the back unprepared and unfortified. In itself the wrench was not severe. Occurring in a back, the seat of hypertrophic changes, permanent disability results. The third vertebra is flattened. The flattening affects the body of the 3rd lumber vertebra first, and more frequently than the others.

5. A farmer, aged 62, was walking through a railway station. He stepped down a step which he did not see in a dimly lighted hall and fell wrenching his back. He has had a painful back since then. The case is in

litigation. This is a typical senile back. In addition to the various hypertrophic changes the bones have an irregular moth eaten appearance instead of being of uniform density. The articular facet of one side of the 4th is extensively eroded with small spines extending from its margin as well as from the margin of the bodies. 4th and 5th bodies are fused.

These cases are typical instances of the disability occurring in backs that are the seat of chronological and occupational bone changes; in none of them was pain experienced prior to receipt of injury. In each instance the disability was caused by physical strain or a wrench not in itself excessive, but sufficient to cause permanent disability in a structurally vulnerable back. Vertebrae that are the seat of arthritis with similar bone changes will be equally vulnerable to the lesser injuries and equaly prolonged disabilities will result. However, a chronic hypertrophic arthritis gives a warning of its presence by reason of pain antedating injury. The individual with a painful arthritis of the back will protect his back, while the workmen with a symptomless work hypertrophy will subject himself to strain, not excessive per se, but causing permanent damage in his particular type of back. About 70% of hypertrophic spines are painless according to the statistics of Garvin. The incidence of injuries will be relatively greater in this group than in the remainder that has pain associated with the hypertrophic changes, that is, in the true arthritis.

REFERENCES

T. A. Willis: The age factor in chronic arthritis. Journal Bone and Joint Surgery, Vol. 6, page 316.

E. G. Brackett: Low Back Strain. Journal A. M. A., Vol. 83, page 1068.

J. D. Garvin: Hypertrophic arthritis of the spine. Archives of Surgery, Vol. 15, page 118.

George and Leonard: Radiology, 1924.

W. H. Bobart: Back Injuries. Journal A. M. A., Vol. 92, page 698.

B. C. Cushway: Journal A. M. A., Vol. 92, page 701.

W. H. Bobart: Ill. Medical Journal, May, 1929.

J. F. Curran: Infectious arthritis of the spine. Journal of Industrial Hygiene, Vol. 8, page 339.

DISCUSSION

Dr. John R. Harger, Chicago: This has been a very interesting discussion, and I think we are very much indebted to Dr. Miller for bringing this to our attention. I am glad Dr. Miller took little or no time in discussing the etiology of this situation because it has been described so frequently. The interesting and important things which Dr. Miller has brought out should dwell long in the minds of all of us.

I have not before learned to associate trauma and the ordinary spine changes which Dr. Miller has brought out, but his observation shows definitely that these spine changes are more common in the individuals who are subjected to severe strain and those doing heavy work than those living a sedentary life. In other words, we should not suffer from those changes unless we play golf too hard or do some of the handball stunts. We should go along through life without these changes while the fellow handling the pick and shovel is sure to have them.

Another interesting feature brought out by Dr. Miller was, as we have seen in our own work from time to time, that practically all lumbar cases do not complain of the pain, even though the x-ray picture will show the changes. That has been my experience.

The fact that these people are so much more subject to injury has brought forward another great field. In surgery, especially in industrial surgery, it behooves the x-ray man to make more careful examinations of the x-ray plates he takes and make a more careful interpretation of the findings. Dr. Miller will bear me out in this statement that roentgenologists have gone to the courts and sworn that certain changes in the spine were due to the recent injury, when as a matter of fact they were there long before the injury.

Dr. Cushway has done remarkable work along this line and has shown a distinct advantage of taking an x-ray of spines of individuals who are applying for employment in the larger industries where they are subjected to trauma. In fact, I think he has shown in his work that he has saved his company many thousands of dollars in claims by having a picture of the individual's spine before he starts to work.

In the County Hospital in Chicago we have a very large number of hernia cases that are forced in there today by the larger employment organizations, because they have learned to know what a handicap it is to have a man in their employment if he has a hernia. If a man seeking employment has the least sign of a hernia he will not be hired. It looks to me like that is another point that is going to catch these poor fellows who are looking for employment, because these big industries are going to x-ray the spine of every man they employ.

A CONSIDERATION OF NON-OBSTRUCTIVE ANURIA, WITH REPORT OF TWO CASES*

EDWARD WILLIAM WHITE, M.D., F.A.C.S.

CHICAGO

The subject of non-obstructive anuria, i. e., that in which there is some interference with the secretional functioning of the kidney, a suppression, not a retention of urine, by some factor originating outside of the kidney itself, is one which has not received as much attention from urologists as it deserves: and although individual case reports are numerous enough, there are

*Read before the Chicago Urological Society, December meeting, 1929.

but comparatively few papers dealing with the general subject in the literature.

As mentioned by Caulk,[1] Ambrose Dawson,[2] in 1759 reported the very curious case of a female who for 15 months did not pass a drop of urine; there were neither sweats nor any uriniferous odor. After this length suppression she again voided urine. There are several cases of a similar kind but of shorter duration in the literature and the explanation on their occurrence is by no means satisfactory.

Fowler[3] in 1801, published a fairly exhaustive monograph on the subject of non-obstructive anuria, collecting a number of such cases from the literature; these included 14 cases following acute and chronic infections, 8 cases following poisoning (7 corrosive sublimate poisoning), 2 cases due to occlusion of the renal artery, and cases of hysteric and traumatic anuria. Cases of hysteric anuria have been known in literature for some hundred of years back.

Suppression of Urine Secretion by Extra-Renal Causes. Assuming there is no anatomic or disease factor present in the urine secretory apparatus itself, it is obvious that this function might be suppressed in several ways, and that such a suppression of activity may, according to duration, result in an anuria of greater or lesser severity. A change in the cerebral center governing the nerve supply to the kidney might cause a cessation of secretional activity; any interference with the blood supply to the healthy kidney if sufficient might cut off its nourishment and stop its physiologic functioning; a severe traumatism to the kidney such as external contusion, might perhaps also stop its functioning and cause anuria. Again a non-obstructive anuria in the sense in which I wish to be understood, may either be a real suppression of the function of urine secretion by actual functional stoppage of the glomerular and tubular activities within the kidney, or it may be of the nature of a mechanical hindrance to their functioning by some factor originating extrinsically as regards the kidney itself, and without the inherent power of the secretary apparatus to secrete urine being lost. This is different from mere urinary retention by some mechanical obstruction such as calculi in the kidney pelvis or ureter, but it does include such a cause as plugging of the uriniferous tubules with hemoglobin deposits, as I shall later refer to. We must, therefore, in speaking of non-obstructive anurias distinguish between a mechanical obstruction wtihin the kidney not due to kidney disease which suppresses or inhibits urine secretion, and a mechanical obstruction below the kidney and independent of it, which prevents the flow of urine. In the nomenclature "non-obstructive anuria" the word obstructive refers to extra-renal mechanical obstruction.

Anurias of the first or suppressional type are what Randall[4] terms pre-renal anurias "where functions behind and beyond the true urinary apparatus are the factors at fault," and to be distinguished from renal anuria where the secretioning tissues have suffered insult and have ceased to perform their functions.

Anuria of Nervous Origin. In regard to anuria originating from some cerebral disturbance it is well known that a derangement of the cerebral center governing kidney urine secretion or its nervous connections may cause a failure of this function. The cerebral center referred to is generally assumed to be either in some part of the pituitary body or in its immediate vicinity. Tumors of this region are known to affect the amount of urine secretion and in diabetes insipidus there is usually an anatomic disturbance of this cerebral center.

Anuria due to vascular spasm may be placed in this type. Eisendrath[5] reported a case of non-obstructive anuria (without evident lesion) in which the ureteral catherization alone relieved a spasm of the renal vessels probably the result of stimulation of the splanchnic nerves. There are other instances in the literature in which vascular spasm was causative of anuria.

So-called hysterical anurias should also be classed here as well as those anurias termed reflex, i. e., cessation of the functioning of healthy kidney following some traumatism operative or other to its mate. I do not wish to discuss this type of anuria concerning which there is already a large literature; I agree with the opinion expressed by Randall that if such a type of anuria is a reality it can only be a nervous phenomenon and may explain cases which have followed surgical operations without shock.

It is doubtful if injuries to the spinal cord can cause a true anuria. The cases of so-called traumatic anuria of this type reported in the

literature are almost always retention of urine due to paralysis of the bladder muscles rather than anuria. Avezza's[6] case of peridural intraspinal abcess and Francois'[7] two cases accompanying spina bifida were retention cases, but the case reported by Hyman is doubtful. Hyman's[8] case was that of a boy who was twice under anesthesia for traumatic fracture of both femurs. Nine days after the second anesthesia there was a massive hematuria followed by complete anuria. Of course, this may have been a case of low blood pressure anuria, such as will be referred to later. Cases of anuria following lumbo-pelvic traumatisms reported in the literature may be classed as doubtful. Many cases of retention of urine following spinal and other injuries are incorrectly spoken of as anurias which they are not.

Anurias due to changes in Blood Supply to the Kidney. Coming to the second general underlying cause which might be concerned in creating a state of true anuria, i. e., interference with the blood supply of the kidney, this may be considered from the points of view either of a change in the actual amount of blood supplied to the kidney, to some change in the blood vessels or to some change in the nature or composition of the blood. We must also bear in mind that a change in the blood supply within the kidney effects its nerve supply, which may aid in causing ischemia.

In regard to the blood supply to the kidney, Randall says that a certain pressure in the afferent renal vessels (60 mm. Hg.) is essential for urinary secretion to take place and that lower figures are accompanied by anuria. The pressure at which the blood enters the kidney is, therefore, of very great importance. Normally glomerular pressure is about 90 mm.; that is, about 30 to 40 mm. below normal blood pressure. Richards and Plant[9] also state that from recent studies it would appear that the secretion of urine depends to a large extent on the blood pressure in the renal vessels.

An occlusion stricture or compression on the renal artery or renal vein affecting the glomerular pressure would naturally tend toward ischemia and anuria. Pederson[10] cites two cases of non-obstructive anuria in one of which the right renal artery was compressed by the cystic remains of the totally disorganized left kidney; in the other an aortic aneurism had compressed the artery of a solitary kidney. The case reported by Oudenal and Hulst[11] is different in the mode but similar in effect. In this case the abdominal aorta was thrombosed due to an arteriosclerotic process. The thrombus had spread into the renal arteries with almost complete anuria. The experiments of Stoll and Carlson[12] showed that occlusion of the renal artery or of the renal vein induced anuria not only during the period of anemia but also for varying periods following the release of the clamped vessels.

Anuria may result from low blood pressure. Regarding anurias due to low blood pressure, Randall says that a transient anuria accompanies a low blood pressure and that the anurias coincident to major surgical operations fall into this class as due to blood pressure changes.

Mac Nider[13] says that the anurias occurring in normal animals during anesthesia have been associated with either a low blood pressure or with a depletion of the alkaline reserve of the blood, i. e., an acidosis. Acidosis is usually associated with low blood pressure. Hofrichter[14] refers to acidosis as a cause of uriniferous tubule changes and states that injections of concentrated acids or alkalis into the blood will cause glomerular and tubular changes identical with those in bacterial toxemias.

Anurias Due to Bacterial and Other Toxins in the Blood. One of the ways in which a toxin circulating in the blood, whether of bacterial or other origin, produces an anuria is by a constriction of the capillaries of the glomeruli and its consequent reflexion in the blood supply of the tubules. Hofrichter, who deals with anuria especially from the point of view of the effects of the toxemias arising from infectious diseases upon the blood supply of the tubules and glomeruli, shows that the tubule is dependent for its blood supply upon what amount of blood can pass through the glomerulus, which later is generally conceded to be only a tuft of capillaries having a principal afferent and a principal efferent vessel, this later giving off branches, which are wrapped around the tubule as it emerges from Bowman's capsule. It is therefore easy to understand how degeneration of the epitheluim and a consequent failure of the function of reabsorption of glomerular fluids by the tubu-

lar epithelium may result from arterial involvement and a depleted blood supply to the tubule, since anything that affects the supply to the capillary tuft injures the tubule dependent upon it. The capillaries connect the arterioles and venules.

Hofrighter states that in the acute infectious diseases a toxin circulating in the blood comes in contact with the capillaries throughout the body and constricts them, with a consequent elevation of the blood pressure and a capillaritis. The anuria which is clinically observed to follow cases of acute or chronic infections is therefore the result of toxemia which constricts the kidney capillaries and sets up a tubular ischemia. The kidney capillaries are affected by circulating toxin the same as all other capillaries, but in the kidney the capillaries have a secondary effect on the tubules.

This action of the toxin on the vessels may be considered as a kind of arteriosclerosis. In fact, it is known that the acute and chronic infections produce arteriosclerosis. Jardine and Kennedy[15] in a report of 12 cases of suppression of urine in eclamptic or pregnancy toxemia cases says that a certain amount of arteriosclerosis was found in some of them. Arteriosclerosis produces an ischemia in the organs which the arteries supply with blood. The case of anuria reported by Audendal and Hulst is indirect but precisely of this nature. In this case the abdominal aorta was thrombosed due to an arteriosclerotic process. The thrombus had spread into the renal arteries, with almost complete necrosis of the kidney.

The anurias due to toxemia in acute and chronic infections reported in the literature would appear to be explained according to Hofrighters' views. Of the cases of non-obstructive anuria collected by Fowler, 14 were due to bacterial infective diseases; 8 were due to the action of chemical toxic agents, particularly corrosive sublimate. Since the date of Fowler's report many cases of the same kind have been reported. A transient anuria is very frequently observed in cases of scarlet fever nephritis, and Higgins and Graf[16] in reporting a personal case state that there are several cases of the kind reported in the literature, in some of which the anuria lasted up to a limit of 45 days.

A less usual case of anuria is the toxemia of pregnancy and the puerperium. Jardine and Kennedy report 12 cases of suppression of urine of this type. In all cases there was the common feature that the patient suffered from the condition known as the toxemia of pregnancy. Cortical necrosis is one of the features of eclampsia and where necrosis is found there is always marked toxemia.

The mode of action in this as is other bacterial toxemias appears to be, as already stated, a capillaritis, interference with the blood supply and blood pressure, necrosis and anuria. When an interstitial nephritis is already present in a patient with a pregnancy toxemia, there is grave danger of suppression of the urine. In 6 of the cases reported by the authors named autopsies showed a symmetrical necrosis of the renal cortex. The autopsy of Girard's[17] patient with eclampsia and anuria showed that the toxin cause epithelial lesions at the site of the active parts of the tubules, with intense congestion of all the renal parenchyma and interstitial edema. Commenting on his case Girard states that it only needs a slight interstitial edema in order that the pressure in the interorganic spaces of the kidney should become superior to the pressure in the afferent arterioles, resulting in scanty urine secretion.

The reason why anuria is not more frequently observed in cases of eclampsia is probably because the eclamptic toxin is modified in the liver before it is excreted by the kidneys, and it is only in cases in which the liver action is deficient and the toxin passes unaltered to the kidneys that capillaritis and cortical necrosis occurs in these organs. Of course, this applies to other toxins besides that of eclamspia.

The following case of anuria which I recently observed, I consider very curious and interesting. In this case the anuria followed an unsuspected rupture of the appendix with a limited peritonitis. I consider the etiology of the anuria in this case to be a toxemia arising from the peritonitis which easily affected badly damaged kidneys, especially since the liver was also found diseased. The case is therefore in line with what I have just said in regard to disease of the kidney and liver, facilitating anuria in toxemia cases.

CASE REPORT

Case 1. M. D., a man about 30 years old, admitted to the Alexian Brothers' Hospital about 5:45 P. M.,

July 26, 1928, acutely ill, complaining of anuria of two days' duration, intense abdominal pain and bloody vomit. Temperature 100.2; pulse 102.

History: The patient was seen the previous evening at his home by a local physician, who was informed that the patient had been treated with castor oil for acute indigestion. The physician gave a morphine injection which greatly relieved the patient. As the pain extended down to the scrotum and penis, the physician called the author into consultation and it was recommended that the patient be at once sent to the Alexian Brothers' Hospital for further examination.

Examined at the hospital immediately after admission by hospital physician and the author, it was agreed that the patient was suffering from suppression of urine. On catheterization only one-half ounce of urine containing blood, pus and twenty-five hyaline casts to the field was obtained. An attempt to introduce a cystoscope failed owing to the small size of the meatus until a meatotomy was done. Cystoscopy and roentgenogram of the urinary tract were negative.

A thorough physical examination was impossible on account of the patient's extreme condition. During the following two days the patient became steadily worse. Abdominal pain and distention increased; vomiting continued and the temperature gradually rose to 106 on July 28, when he died. Autopsy showed a perforated appendix with limited peritonitis and a marked diseased condition of the kidneys and liver.

Undoubtedly the appendix had ruptured some time before the patient was seen by his local physician. The kidney symptoms, including intense pain over the kidney area, entirely masked the symptoms of peritonitis, and even if the diagnosis of ruptured appendix had been made, the patient could not have been operated on owing to the suppression of urine.

The anuria observed in cases of mercuric chloride poisoning is typical of the effects of toxemia due to inorganic chemical agents. Flynn[18] recently reported a case of complete anuria following the insertion of mercuric chloride tablets in the vagina. Bowers and Trattner[19] also reported a case with anuria of 48 hours' duration.

An anuria is more likely to result in these cases of inorganic poisoning if there is some degree of nephritis already present. In the case of mercurial poisoning reported by Menatrier, Benard and Surmont[20] the patient died after an anuria had lasted 12 days. Autopsy, besides showing the recent effects of the mercury in the glomeruli and tubules, also showed the presence of an old glomerular nephritis and the recent effects were intensified where the nephritic changes were most marked.

The anuria which may occur in cases of tartaric acid nephritis as reported by Underhill and associates[21] is also of this type.

The following case of anuria following mercuric boisoning was observed by me a few years ago. The case has some interest, inasmuch as it followed an intravenous injection.

CASE REPORT

Case 2. L. R., a physician, 37 years old, admitted to Illinois Masonic Hospital, July 21, 1925, suffering from symptoms of mercuric poisoning.

The history showed that the patient, who was a physician, had suffered persistently from boils. He had read in a medical journal a description of a method of treating boils by a mercuric intravenous injection. He sent the prescription to a drug store where it was filled and the injection was made by a colleague. There was some reason to believe that an error was made in filling the prescription and that an excessive amount of mercury was given. A few hours later he felt ill and nauseated, treated himself that evening and night but continued to feel worse. The following day he passed frequent stools containing blood and mucus. Urination became infrequent and practically ceased. He came to the hospital two days later with all symptoms aggravated and rapid irregular breathing. Anuria almost complete.

He received glucose and saline injections and sodium salts, including the acetate, intravenously and per rectum; also adrenaline to support the failing cardiac action. Restlessness and muscular spasms increased in frequency and intensity and he died in convulsions the third day following his entering the hostital. No autopsy.

Anuria in Cases of Blood Transfusion Due to Hemoagglutinins. We may now take up the consideration of anuria due to changes in the composition of the blood and more particularly that due to plugging or choking of the uriniferous tubules by the deposition of hemoglobin in cases of blood transfusion in which the bloods are not properly typed.

It is known that in a variety of circumstances, such as paroxysmal hemoglobinuria, blackwater and other fevers, the red blood corpuscles may become dissociated with the deposition of hemoglobin in the blood plasms and a consequent hemoglobinemia and hemoglobinuria.

Yorke and Nauss,[22] in 1911, had shown that the injection of rabbits with a solution of hemoglobin produced an obstruction in the kidney tubules. Baker and Dodds[23] in repeating these experiments state that it is reasonable to suppose that the hemoglobin passes through Bowman's capsule in the dilute transudate, the re-

lar epithelium may result from arterial involvement and a depleted blood supply to the tubule, since anything that affects the supply to the capillary tuft injures the tubule dependent upon it. The capillaries connect the arterioles and venules.

Hofrighter states that in the acute infectious diseases a toxin circulating in the blood comes in contact with the capillaries throughout the body and constricts them, with a consequent elevation of the blood pressure and a capillaritis. The anuria which is clinically observed to follow cases of acute or chronic infections is therefore the result of toxemia which constricts the kidney capillaries and sets up a tubular ischemia. The kidney capillaries are affected by circulating toxin the same as all other capillaries, but in the kidney the capillaries have a secondary effect on the tubules.

This action of the toxin on the vessels may be considered as a kind of arteriosclerosis. In fact, it is known that the acute and chronic infections produce arteriosclerosis. Jardine and Kennedy[15] in a report of 12 cases of suppression of urine in eclamptic or pregnancy toxemia cases says that a certain amount of arteriosclerosis was found in some of them. Arteriosclerosis produces an ischemia in the organs which the arteries supply with blood. The case of anuria reported by Audendal and Hulst is indirect but precisely of this nature. In this case the abdominal aorta was thrombosed due to an arteriosclerotic process. The thrombus had spread into the renal arteries, with almost complete necrosis of the kidney.

The anurias due to toxemia in acute and chronic infections reported in the literature would appear to be explained according to Hofrighters' views. Of the cases of non-obstructive anuria collected by Fowler, 14 were due to bacterial infective diseases; 8 were due to the action of chemical toxic agents, particularly corrosive sublimate. Since the date of Fowler's report many cases of the same kind have been reported. A transient anuria is very frequently observed in cases of scarlet fever nephritis, and Higgins and Graf[16] in reporting a personal case state that there are several cases of the kind reported in the literature, in some of which the anuria lasted up to a limit of 45 days.

A less usual case of anuria is the toxemia of pregnancy and the puerperium. Jardine and Kennedy report 12 cases of suppression of urine of this type. In all cases there was the common feature that the patient suffered from the condition known as the toxemia of pregnancy. Cortical necrosis is one of the features of eclampsia and where necrosis is found there is always marked toxemia.

The mode of action in this as is other bacterial toxemias appears to be, as already stated, a capillaritis, interference with the blood supply and blood pressure, necrosis and anuria. When an interstitial nephritis is already present in a patient with a pregnancy toxemia, there is grave danger of suppression of the urine. In 6 of the cases reported by the authors named autopsies showed a symmetrical necrosis of the renal cortex. The autopsy of Girard's[17] patient with eclampsia and anuria showed that the toxin cause epithelial lesions at the site of the active parts of the tubules, with intense congestion of all the renal parenchyma and interstitial edema. Commenting on his case Girard states that it only needs a slight interstitial edema in order that the pressure in the interorganic spaces of the kidney should become superior to the pressure in the afferent arterioles, resulting in scanty urine secretion.

The reason why anuria is not more frequently observed in cases of eclampsia is probably because the eclamptic toxin is modified in the liver before it is excreted by the kidneys, and it is only in cases in which the liver action is deficient and the toxin passes unaltered to the kidneys that capillaritis and cortical necrosis occurs in these organs. Of course, this applies to other toxins besides that of eclamspia.

The following case of anuria which I recently observed, I consider very curious and interesting. In this case the anuria followed an unsuspected rupture of the appendix with a limited peritonitis. I consider the etiology of the anuria in this case to be a toxemia arising from the peritonitis which easily affected badly damaged kidneys, especially since the liver was also found diseased. The case is therefore in line with what I have just said in regard to disease of the kidney and liver, facilitating anuria in toxemia cases.

CASE REPORT

Case 1. M. D., a man about 30 years old, admitted to the Alexian Brothers' Hospital about 5:45 P. M.,

July 26, 1928, acutely ill, complaining of anuria of two days' duration, intense abdominal pain and bloody vomit. Temperature 100.2; pulse 102.

History: The patient was seen the previous evening at his home by a local physician, who was informed that the patient had been treated with castor oil for acute indigestion. The physician gave a morphine injection which greatly relieved the patient. As the pain extended down to the scrotum and penis, the physician called the author into consultation and it was recommended that the patient be at once sent to the Alexian Brothers' Hospital for further examination.

Examined at the hospital immediately after admission by hospital physician and the author, it was agreed that the patient was suffering from suppression of urine. On catheterization only one-half ounce of urine containing blood, pus and twenty-five hyaline casts to the field was obtained. An attempt to introduce a cystoscope failed owing to the small size of the meatus until a meatotomy was done. Cystoscopy and roentgenogram of the urinary tract were negative.

A thorough physical examination was impossible on account of the patient's extreme condition. During the following two days the patient became steadily worse. Abdominal pain and distention increased; vomiting continued and the temperature gradually rose to 106 on July 28, when he died. Autopsy showed a perforated appendix with limited peritonitis and a marked diseased condition of the kidneys and liver.

Undoubtedly the appendix had ruptured some time before the patient was seen by his local physician. The kidney symptoms, including intense pain over the kidney area, entirely masked the symptoms of peritonitis, and even if the diagnosis of ruptured appendix had been made, the patient could not have been operated on owing to the suppression of urine.

The anuria observed in cases of mercuric chloride poisoning is typical of the effects of toxemia due to inorganic chemical agents. Flynn[18] recently reported a case of complete anuria following the insertion of mercuric chloride tablets in the vagina. Bowers and Trattner[19] also reported a case with anuria of 48 hours' duration.

An anuria is more likely to result in these cases of inorganic poisoning if there is some degree of nephritis already present. In the case of mercurial poisoning reported by Menatrier, Benard and Surmont[20] the patient died after an anuria had lasted 12 days. Autopsy, besides showing the recent effects of the mercury in the glomeruli and tubules, also showed the presence of an old glomerular nephritis and the recent effects were intensified where the nephritic changes were most marked.

The anuria which may occur in cases of tartaric acid nephritis as reported by Underhill and associates[21] is also of this type.

The following case of anuria following mercuric boisoning was observed by me a few years ago. The case has some interest, inasmuch as it followed an intravenous injection.

CASE REPORT

Case 2. L. R., a physician, 37 years old, admitted to Illinois Masonic Hospital, July 21, 1925, suffering from symptoms of mercuric poisoning.

The history showed that the patient, who was a physician, had suffered persistently from boils. He had read in a medical journal a description of a method of treating boils by a mercuric intravenous injection. He sent the prescription to a drug store where it was filled and the injection was made by a colleague. There was some reason to believe that an error was made in filling the prescription and that an excessive amount of mercury was given. A few hours later he felt ill and nauseated, treated himself that evening and night but continued to feel worse. The following day he passed frequent stools containing blood and mucus. Urination became infrequent and practically ceased. He came to the hospital two days later with all symptoms aggravated and rapid irregular breathing. Anuria almost complete.

He received glucose and saline injections and sodium salts, including the acetate, intravenously and per rectum; also adrenaline to support the failing cardiac action. Restlessness and muscular spasms increased in frequency and intensity and he died in convulsions the third day following his entering the hostital. No autopsy.

Anuria in Cases of Blood Transfusion Due to Hemoagglutinins. We may now take up the consideration of anuria due to changes in the composition of the blood and more particularly that due to plugging or choking of the uriniferous tubules by the deposition of hemoglobin in cases of blood transfusion in which the bloods are not properly typed.

It is known that in a variety of circumstances, such as paroxysmal hemoglobinuria, blackwater and other fevers, the red blood corpuscles may become dissociated with the deposition of hemoglobin in the blood plasms and a consequent hemoglobinemia and hemoglobinuria.

Yorke and Nauss,[22] in 1911, had shown that the injection of rabbits with a solution of hemoglobin produced an obstruction in the kidney tubules. Baker and Dodds[23] in repeating these experiments state that it is reasonable to suppose that the hemoglobin passes through Bowman's capsule in the dilute transudate, the re-

action of which is in the region of that of the blood. When the tubules are reached, reabsorption and concentration takes place, together with an increase of acidity of the urine. The hemoglobin is then precipitated; that is to say, if the reaction of the urine be below about ph 6 and there is a sufficient concentration of NaCL (about 1 per cent.) brown pigment will be precipitated in the tubules.

Hemoglobinuria is not uncommonly observed following blood transfusions with improperly matched bloods, and the function of the kidney becomes so deranged with deposits of hemoglobin in the tubules that the patient dies with suppression of urine and uremia.

The amount of hemoglobin set free during an attack of paroxysmal hemoglobinuria or blackwater fever is relatively small, in comparison with that set free during untyped blood transfusion, and the patient can usually dispose of it.

Bancroft, of New York, reporting in 1925, found 8 cases of anuria following blood transfusions reported in the literature, 7 of which were preceded by a hemoglobinemia. Fatal cases have been reported since by Bancroft[24], by Baker and Dodds, and 2 cases by Shera.[25] The bloods of donor and recipient in these cases were probably not properly matched and latent hemoagglutinins were present.

Treatment of Anuria. The treatment of anuria will be covered very briefly.

In anurias having a nervous origin relief can as a rule only be given by attention to any definite cerebral or nerve lesion. If of hysterical or spasmodic or reflex type, a ureteral catherization will often relieve the nervous tension.

In toxic anurias both decapsulation and nephrotomy have been tried. Jardine and Kennedy say that in eclamptic anuria decapsulation is of no value. Girard states that in cases of eclampsia with anuria treated by decapsulation the mortality was 5 per cent. He found only 4 cases in the literature in which eclampsia with anuria was treated by nephrotomy, 2 cases of which were successful, and he adds one of his own. In this case the kidney that was incised began to function on the evening of the operation.

Bowers and Trattner recommend repeated venesection-blood transfusion in toxic anuria. In a case of mercuric chloride anuria this method was followed with success, but a decapsulation was done as well. The venesection-transfusion lowers the amount of accumulated catabolic products by frequent removal and by repeated dilutions of the remaining circulating blood. It is a detoxifying procedure.

SUMMARY

I have hereby presented an exhaustive review of the literature on the subject of non-obstructive anuria with two case reports and personal observations.

REFERENCES

1. Caulk, J.: Jour. Urol., 1925: xiii: 265.
2. Dawson, A.: Philosoph. Transac., Lond., 1759: li: 215.
3. Fowler: Cited by Pedersen.
4. Randall, J.: Jour. Urol., 1925: xiii: 257.
5. Eisendrath, D.: Minnesota Med., July, 1928, p. 449.
6. Avezza, G.: Minerva Med., 1928: viii: 1199.
7. Francois: Jour. d'Urol., Paris, 1928: xxv: 136.
8. Hyman, A.: Amer. Jour. Surg., 1928: iv: 442.
9. Richards, A. N., and Plant, O. H.: Amer. Jour. Physiol., 1922: lix: 144.
10. Pedersen, J.: Boston Med. & Surg. Jour., 1910: clxii: 8.
11. Oudendal and Hulst: Nederl. Tijdsschr. f. Geneesk., 1925: ii: 41.
12. Stoll, J. E., and Carlson, A. J.: Amer. Jour. Physiol., 1923: lxvii: 153.
13. MacNider, W. deB: Amer. Jour. Surg. (nesthesia Supp.), 1922: xxxvi: 42.
14. Hofrichter, C. H.: Northwest Med., 1928: xxvii: 382.
15. Jardine, R., and Kennedy, A. M.: Lancet, Lond., 1920: ii: 116.
16. Higgins, H. L., and Graf, W. J.: Amer. Jour. Dis. Child., 1927: xxxiii: 926.
17. Girard: Jour. d'Urol., Paris, 1920: ix: 97.
18. Flynn, W. A.: Bost. Med. & Surg. Jour., 1927; cxcvii: 436.
19. Bowers, C. A., and Trattner, H. R.: Surg. Gynec. & Obstet., 1924: xxxix: 229.
20. Menetrier, Benard and Surmont: Bull. et mém. Soc. méd. d. hop. de Paris, 1924: xlviii, 1677.
21. Underhill, F. P., and Associates: Jour. Exper. Med., 1913: xviii: 322.
22. Yorke, W., and Nauss, R. W.: Ann. Trop. Med., 1911: v: 287.
23. Baker, S. L., and Dodds, E. C.: Brit. J. Exper. Path., 1925: vi: 247.
24. Bancroft, F. W.: Ann. Surg., 1925: lxxxi: 733.
25. Shera, G.: Brit. Med. Jour., 1928: 754.

FACTORS THAT MAKE FOR SAFE GALL BLADDER SURGERY*

JOHN B. HAEBERLIN, M. D., F. A. C. S.

CHICAGO

In an analysis of 80 consecutive cases operated on for gall bladder infection at St. Bernards, we had a death list of seven. These operations were performed by the surgical staff and occurred during 1929. Our mortality of 8.8 per cent. was considered too high, and therefore,

*Read before Section on Surgery, Illinois State Medical Meeting, May 20, 1930.

as the basis of this paper, I am dealing with the factors which may help reduce our mortality.

In perusal of literature on the subject, one is confronted repeatedly by reports giving a mortality as low as one and even one-half per cent. for cholecystostomies and cholecystectomies. Only occasionally will one find published a mortality rate of fifteen to twenty per cent. This discrepancy in mortality statistics is easily explained if one will analyze the type of cases operated on. Dr. F. N. G. Starr, Professor of Surgery at the University of Toronto, in an analysis of nearly one thousand gall bladder operations in speaking of mortality says: "In the uncomplicated cases of chronic cholecystitis, when a cholecystectomy is done, this is well under one per cent., while in the desperately acute imperative emergencies where only the simplest drainage is done the mortality is approximately 15 per cent., and in the variously complicated cases with acute or chronic pancreatities the rate is almost 5 per cent." It is clear that the type of case is the underlying factor for the difference in our mortality rate.

Analyzing our mortality list for the year 1929 the following is revealed: (See Table 1.)

no alarming complications such as heart, kidney, etc., except in one of the cases in which the blood sugar was .367 and the kidney showed many hyaline and granular casts. However this case was under treatment and observation until the kidneys cleared up and the blood sugar reduced to normal before operation.

In this series of 80 cases, 15 were acute, and with the exception of those that died, made uneventful satisfactory recoveries. Among the recoveries we have one case of acute gangrenous cholecystitis with large rupture and copiously spilling its infective contents into the peritoneal cavity, soiling everything it came in contact with —still we have recovery.

What factors, therefore, have we which will help us to obtain a lower mortality? They might be classified as:

A. Those conditions over which we have no control.

B. Those conditions which we are able to modify. Under the first division "the conditions over which we have no control" we may place:

1. The general condition of the patient.
2. The pathology as it exists on first examination.

TABLE I
MORTALITY LIST

	Age	Temperature	Leucocyte Count	Abdomen	General Condition	Pathology	Remarks
I. 205,060	48	101	24,800	Acutely tender	Poor Risk	Acutely edematious Stones (G. B. Re)	When reconsidered would not operate
II. 203,306	41	98.6	5,000	Tenderness (chronic)	Fair Risk	Autopsy Thymico Lymphaticus Stones	Would not operate
III. 204,994	60	101	14,200	Acute	Poor Risk	Stones Empyema of G. B. Cholecystostomy	When reconsidered would operate
IV. 203,630	54	99	12,000	Sub acute	Poor Risk	Cholecystostomy Stones	On entry—Kidney—casts B. Sugar .367. Reconsidered would not operate
V. 205,833	56	102	14,000	Acute	Fair Risk	Acute G. B. Stones edema	Would not operate
VI. 201,419	39	98.6	6,000	Sub acute	Fair Risk	Cholecystostomy No Stones	Would not operate
VII. 204,194	36	100	(Lost)	Sub acute	Good Risk	Cholecystostomy Stones	Would not operate

In an analysis of these seven cases there is nothing that definitely contraindicates operation; they were all operated upon by conscientious, good surgeons who chose the operative method of treatment, yet when confronted with a fatal outcome the empymas was the only case, which upon reconsideration, would be deemed advisable to operate on. There was no icterus,

3. Associated diseases and complications.
4. The type of infection, its virulence and fulminance.
5. The anatomical anomalies of patient.
6. Patient's age, obesity and constitutional make up.

With the above factors we must accept conditions and fight along the defensive lines.

Under the second division "the conditions which we are able to modify" might be found:

1. Choice of anesthesia.
2. Accuracy of diagnosis.
3. Surgical judgment.
4. Length of operation.
5. Perfection of technique.
6. Icterus.
7. Blood sugar.
8. Acidosis.

In consideration of these factors we must be aggressive. They call for positive action, judgment and procedure. Much profit could be derived from a critical analysis of each heading with especial reference to its influence on mortality.

In an analysis of the seven fatal cases:

3 were acutely ill, 4 sub acutely.

4 were cholecystostomies, 3 cholecystectomies.

6 out of the 7 had stones.

Of the remaining 73 cases which satisfactorily recovered:

12 were definitely acute, 61 chronic.

39 were cholecystostomies, 7 acute, 18 with stones.

34 were cholecystectomies, 5 acute, 28 with stones.

(46 had stones and 27 had no stones.)

From an analysis of these cases, I believe, one struck by the fact that the surgeon is governed by the presenting pathology and condition of the patient as to his line of procedure—drainage or excision. The presence or absence of stones did not seem to influence the type of operation in this series.

In an analysis of these 80 cases from a standpoint of early infection as a possible fore-runner or feeder for an infected gall bladder we have the following careful historical analysis of the 43 cholecystostomies:

7 gave history of childhood involvement of gastro-intestinal tract.

16 of appendix involvement.

4 of pneumonia.

3 of gynecology infection.

7 of influenza, scarlet fever, teeth, tonsils, etc.

6 failed to give any information as to possible source of infection.

In the 37 cholecystectomies we have the following history or possible fore-runner:

7 with appendix infection.

4 with early gastro-intestine involvement, dyspepsia, jaundice, etc.

4 with definite chronic rheumatism.

18 with scarlet fever, teeth, tonsils, influenza, pneumonia.

2 with gyncological infection.

2 failed to give information from history.

There seem to be no relationship to the type of infection and the formation of stones. Here would be a splendid opportunity for research. It is singular that in the cases which gave a definite rheumatic history the gall bladder was removed in each case. These factors which we are able to govern or modify are of much importance, and recovery or failure may hinge on any one of them; still, the idealistic way would be the prevention of gall bladder disease. This I believe has a great future. It appears that gall bladder disease hinges on two factors:

1. Infection.

2. Liver function, especially cholesterol-metabolism. If these two are perfectly controlled it would seem as though gall bladder disease would sink to a minimum.

Regarding infections: The profession is keenly alert to it, especially in children. However, they seem to have lost sight of the fact that a well-balanced life, in which proper consideration is given to muscular development and exercise, out-of-door ruddiness and hardiness of constitution is a factor influencing infection and liver metabolism.

However, as long as we have infections we have gall bladder disease. How will we reduce mortality? It is self-evident from an analysis of statistics that the line which divides our low mortality from high mortality is the chronic from the acute cases. Therefore, in all simple acute cases it is our duty to tide them over to the chronic group before operation. These simple infective cases practically all recede and become chronic under anatomic and physiological rest. They may have recurrences and should be operated on in a remission. In phelgminous, suppurative, gangrenous, and perforative gall bladder, operation should be immediate. The board-like rigidity with fever, chill, rapid pulse, pain and vomiting should direct us to immediate operation, for in this class of cases our operation is life saving. Let us face them squarely and accept our heavy mortality, rejoicing in

those whose life we have saved. Ordinarily the diagnosis in the acute cases is easily made. Error may come in mistaking a high lying, gangrenous appendix or perforated-gastric or duodenal ulcer or an acute involvement or pancreas. Palpation, touch showing rigidity and tenderness, physical examination and blood examination are of paramount importance. Cholecystography has no place in such acute cases.

In chronic gall bladder we have a condition more elusive and difficult to diagnose. Even after most painstaking care we are sometimes mistaken. Functional analysis of gall bladder by Grahan-Cole method of cholecystography is of inestimable value. Its correctness is said to be above 90 per cent. Its greatest failure is stones. It should be used universally in cases of doubtful diagnosis. In our x-ray department we have been rechecking our cases of cholecystography, having made the discovery that the pictures were not uniform. Oral administration is uncertain, the absorption not being constant. It is well to check with the liquid preparative against the capsule administration. In five cases at the first attempt the gall bladder showed no filling; subsequently, however, we were able to fill these gall bladders. No gall bladder examination is complete without examination of stomach and duodenum. When there is a discrepancy between cholecystography and clinical analysis it is wise to be guided by the clinical findings. Chronic infection may be the result of an acute subsidence or come on insidiously. Once established it seems to be always present. It is, I believe, never primary, the infection being in the wall (interstitial), mucosa (catarrhal) or both. Upon this pathology rests the logic of either drainage or extirpation. Statistics collectively taken justify our conclusions that cholecystectomy is the logical operation in these chronic cases. Crile, in the *Annals of Surgery* of August, 1923, gives a nice summary of statistics tending to prove this.

We have yet to prove that the removal of the gall bladder in any way changes the physiological process of the individual. Nature really does a functional cholecystectomy in these chronic cases by destroying its function. In chronic cases the relationship of morbidity and mortality to the time of operation is well established. Infection is permanent. When it is necessary to operate on an infected gall bladder, the earlier the operation the better. To procrastinate is therefore a neglected responsibility of the attendant. In a given case the earlier the operation the less the pathology and the less the mortality and morbidity.

The keenness of diagnosis varies with different men, therefore, as long as we have personal equation factor in our surgeons we will always have different results.

Infection as it comes to the liver and its adnexa seems to have its localization first in the gall bladder, later we have formation of stones with involvement of ducts followed by disastrous consequences on liver substance, pancreas, and the involvement of surrounding organs by continuity; blood dyscrasias, icterus, liver cirrhosis, pancreatitis with secondary constitutional influences. All this means but one thing—early operation.

Conclusions: 1. In simple acute cases of gall bladder infection—wait. It would greatly reduce mortality. 2. In fulminating acute cases operate immediately, since early operation would reduce mortality. 3. In chronic cases an early operation reduces morbidity and mortality. 4. It is our duty to use all factors under our control for safety of the patient.

DISCUSSION

Dr. Clyde A. Finley, Galesburg: Dr. Fuller earlier in the day expressed the opinion that it would be better if at all times we could have all the cards laid on the table. One is immediately struck with this paper of Dr. Haeberlin by the frankness with which he presented it. It would seem that he has sat in rather severe judgment of, and is perhaps a little over critical with, himself. We must admit that seven deaths in eighty cases is too high, but in a short series of cases statistics may mean nothing, or possibly they can mean everything, so we cannot place too much dependence on the fact that seven cases were lost in eighty operations. The doctor has not gone into an analysis of these deaths sufficiently to give us the cause in each one, neither has he told us in all of the cases why in a reconsideration he would not operate. I am inclined to agree with him, though, in his opinion on each one of them. But I am more inclined to the belief that he would make a change in the routine handling of them, and perhaps operate at a later period.

There is a factor which he did not bring out, but which I think is having a marked influence in our death rate throughout the country. It is always true

that when any lay organization, or individual, interferes in fields that are strange, disaster results. There has been so much lay propaganda and interference in the field of medicine and surgery in the last few years that a great many of these bad results can be traced back to it. Our patients come to us for operative work and, when needed, we advise it, but immediately they outline for us how it is to be done. "Doctor, I do not want to go into the hospital two or three days before operation; I want to go in the morning and be operated on the same day." We are influenced too much by this kind of talk, for the patient is being influenced by the propaganda to cut down the period of hospitalization and reduce the cost of being sick. And on the later end of the patient's stay in the hospital we are influenced again. As soon as the period of pain is over the patient feels well and as long as he or she is lying on the back, feels strong and wants to go home. And sometimes we permit it. We have been influenced more than we should be, and so, in a great many cases our good results have been hampered.

Dr. C. C. O'Byrne, Chicago: In a simple acute case you say you would not operate. How can you tell it will not become fulminating? Why is there danger in operating on a simple acute case?

I would also like to ask what influences your judgment for cholecystectomy or cholecystotomy? Years ago I did not take out gall-bladders because I was afraid. Recently I have taken out every gall-bladder I have operated on except one. This was an enormous gall-bladder; it was just at the stage of becoming gangrenous and was adherent to everything about it. The patient was in the hospital six weeks and we did nothing but drain. The patient made a recovery. If you remove the gall-bladder it is hardly necessary to drain. In ordinary cases I make no drainage. The patients are in the hospital about two weeks. If you drain, the stay in the hospital is prolonged by a very considerable time and the patient does not do as well as those in which the gall-bladder is removed and there is no drainage. I have only left in one gall-bladder in the last several years and my results have been very gratifying.

Dr. J. B. Haeberlin, Chicago (closing the discussion): In simple acute cases I would be governed by the condition from hour to hour. I would postpone operation when improvement is shown. On reconsideration of the cases we have had, I would be willing to take chances over again and postpone operation.

I think the decision as to cholecystectomy or cholecystotomy depends on the individual surgeon. I think it is logical if the gall-bladder is infected and the infection is either in the mucosa or interstitial tissue, if the gall-bladder does not feel normal and the process is a chronic one, if there are adhesions to the surrounding tissues, if the liver substance does not have a normal appearance and you have little white lines showing lymphatic drainage of the gall-bladder in the liver substance, then one should do a cholecystectomy.

DISEASES OF THE MUCOUS MEMBRANES OF THE MOUTH

(As Encountered in Dermatological Practice*)

CLEVELAND WHITE, M. D.
CHICAGO

In some diseases of the skin, the mucous membranes of the mouth are involved and often furnish a clue to establish an absolute diagnosis. Furthermore, in dermatological practice, there are found some diseases which are peculiar to the mucous lining of the mouth or happen to be so confined exclusively to such areas without the usual concomitant cutaneous findings. Because of the occasional difficulty in establishing a diagnosis and the necessity of establishing a correct clinical opinion, it is felt that it is fitting to discuss some of the more common diseases of these areas and their management. This is a somewhat neglected subject, at least in dermatological circles, but a very important one.

As it has been stated by Fordyce and MacKee,[1] "diagnostic ability for mucous membrane lesions can be acquired usually by constructing a new series of usual impressions based on observation of such lesions alone or combined with a study of their associated prototypes in the skin." The features of individual lesions may at times be sufficient to establish a diagnosis like leukoplakia or malignancy but often one has to base the diagnosis on the associated lesions of the integument as in erythema multiforme or pemphigus.

Oral Mycoses (Superficial.) The interest in superficial fungus dermatoses (ringworm) due to so-called ringworm fungi (or hyphomycetes), thrush, and yeast organisms engages one's attention more and more in certain infections of the mouth and tongue. The thrush infections of infants are well known to all clinicians, but the adult cases are quite new to us all. It must be bore in mind that thrush can occur on the skin either with or without mouth involvement. The causative organism is one of the Monilia group; some fourteen different Monilia have been isolated in this one disease.

Case 1. A boy, 4 months old, had white patches on

*Read before the McLean County Medical Society, Bloomington, Ill., April 8, 1930.

*From the Department of Dermatology, Northwestern University Medical School and the Department of Dermatology, the Norwegian-American Hospital.

the side of the mouth and on the lips; he had had for two weeks a huge bilateral cervical adenitis. Erythemato scaling patches with some crusts were on various parts of the lower part of the face and these dermatological findings were the first noted by the parents. The discrete inflammatory areas on the face with the scaling and oozing suggested a fungus basis at once. The areas in the mouth were creamy colored, distinctly elevated, and some were confluent.

Scrapings were taken and were examined both by the well known 10% potassium hydroxide method and by methylene blue stain. Abundant long filaments were found and cultures later proved to be monilia albicans. As the baby was extremely well nourished, there were no apparent dietary factors.

Case 2. A business man, aged 56, had had a heavy "coated" tongue for three months. He had been under a physician's care in a western city. The fungus nature had been recognized and various fungicidal preparations used. He had lost considerable weight because the tongue involvement had practically destroyed his sense of taste. His tongue had improved some but sufficient elevated whitish areas were still present to make many cultures which grew as monilia. Because of marked loss of weight, examinations were undertaken to rule out any possible systemic invasion. An x-ray examination of the chest was pronounced negative by Dr. R. H. Warden of the Norwegian-American Hospital. A stool examination was found negative by Dr. H. R. Fishback, pathologist of the same institution. Local treatment with gentian violet and weak doses of radium finally produced a cure. He is now enjoying excellent health.

Case 3. A man, aged 48, has had erosions of the commissure of the lips for 18 months and feared cancer. Examination of the areas revealed crusting erosions of the lips. Scrapings from the areas revealed both hyphae and yeast. Both cryptococci and monilia grew in culture, an unusual finding. The diagnosis of mycotic perleche was made. Fungicidal preparations along with x-ray treatment cleared the condition. These representative fungus infection cases show the growing importance of fungi in the etiology of mouth infections.

Vincent's Infection.—"Trench mouth" (or so-called Vincent's infections) has become more common since the war but one sees many cases which might be so considered, but in reality are other diseases with secondary infection with Vincent's organisms. Vincent's organisms are easily found and are known to all.

Practically every clinician is acquainted with Vincent's stomatitis in which the gums are swollen and ulcerated, and teeth are often bared through erosion of the alveolar margin. The ulcers are shallow, discrete, have even borders and a non-indurated base.

Case 4. A man, aged 30, had had sore gums for four weeks with some sore throat and some tender areas on the commisure of the lips. He stated he had had "trench mouth" for three weeks. Examination showed many syphilitic mucous patches—in fact, the chancre from which spirocheta pallida were found was still present on his right lower chin.

Case 5. A young physician had developed ulcers on his gums and side of his tongue for one week. His temperature varied between 100° and 102°. The clinical appearance was that of Vincent's disease and was subtantiated by laboratory examinations. Local use of sulpharsphenamine was quite efficacious. Numerous alkalis had been used. I cannot subscribe to the statement that all Vincent's cases disappear miraculously under sodium perborate paste—some of the milder cases do.

Case 6. Vincent's angina is sometimes a very severe affliction. A young man of 23 had had sore throat for three weeks. Several ulcerated areas were present on the tonsils, pharynx and extending to the hard palate. Several necrotic horny spicules were loosened from the hard palate. His blood Wassermann was negative. Heroic dosage of neoarsphenamine, intravenously and locally finally arrested the process but there was considerable resultant deformity of the parts.

Malignancy. Cancer of the mouth, whether on the lips, cheeks or tongue, demands early diagnosis and radical treatment as it is always, clinically speaking, of the squamous celled type and metastases sooner or later.

An indurated mass or an ulcer with an indurated border should be viewed with suspicion and, in case of doubt, a section of tissue should be taken for pathological examination. Whether tertiary syphilis is present or not, the treatment is the same, as this infection is then not contagious and the malignancy is to be eradicated without any delay. The method of choice is wide destruction by electro-coagulation followed by radium. Radium alone has been found to be insufficient treatment in a large percentage of cases. Wyeth of New York, who has had a wide experience with high frequency current and radium, states in a personal communication that his percentage of recurrence is vastly less under the former method than with radium. Of course, where there are already metastases as in the cervical lymph nodes and biopsy shows a high grade malignancy, there is no known method of cure and any treatment must be of palliative nature.

Precancerous afflictions commonly encountered are leukoplakia, luetic gummas, scars, hypertrophied papillae, and ordinary papillomas. The latter two can be removed surgically or destroyed

by diathermy. The factors of ragged teeth and smoking are known to us all.

Case 7. A man, aged 32, had had a fissure on the dorsum of the tongue for three months. Examination showed a fissure about ⅛ inch deep and about ½ inch long, lying within a patch of leukoplakia. Clinically it was considered to have undergone malignant degeneration. A biopsy showed typical squamous celled epithelioma. Destruction by electro-therapy and insertion of radium needles produced a clinical cure. The leukoplakia was apparently traumatic in origin.

Case 8. A woman, aged 38, had had a hard swelling about the size of a hazelnut on the right side of the tongue for six months. Induration of border was clinically epithelioma. All usual laboratory tests were negative. Thorough destruction has produced a cure of two years' standing. The cervical lymph nodes have never been involved.

Case 9. A man, aged 35, had a large hard swelling just beneath the ramus of the jaw on the right side. Examination showed a mass of hard discrete glands and were pronounced to be of a malignant nature. Upon further questioning it was found that he had a sore on right side of lower lip which had been treated by radium eighteen months ago. Section of a gland showed definite squamous celled epithelioma of grade three type. He died in two months' time.

Syphilis. Extragenital chancres occur around the lips and on the tongue. The persistence of an elevated, indurated erosion with a marked unilateral bubo should at once call for a darkfield examination. The blood Wassermann is of limited value in an early syphilitic infection, becoming positive in a large percentage as the secondary stage is approached. Cutaneous manifestations when present or mucous patches may clinch the diagnosis upon inspection, but often it is necessary to confirm by the aforementioned laboratory procedures. Chancres may be multiple.

Case 10. A woman, aged 21, had had what she called a "boil" on left lower lip for several weeks. She claimed that she had had medical attention for a "thickened" cold sore; at any rate, the huge unilateral cervical adenitis drew one's attention to the possibility of a primary luetic lesion. The darkfield examination was found to be teeming with spirocheta pallida and the blood Wassermann was strongly positive. Apparently she had gained the infection from kissing some one who had had mucous patches on the lips.

Secondary syphilis occurs as mucous patches in the mouth. Relapsing secondaries are prone to occur in such a moist area. Both types are highly infectious—in fact the seriousness of infections from recurrent secondaries should be emphasized and reemphasized. Mucous patches are round or oval patches which have resulted from erosion of superficial ulceration of luetic papules (like on the skin). A grayish exudate is usually present. While they can occur on any part of the mucous membrane, they are usually found on commissures of lips, the buccal surfaces, anterior pillars and tonsils. I have had the opportunity to see a goodly number the past several years and a high percentage have been considered trench mouth or Vincent's infection even in the presence of cutaneous findings which if investigated would have pointed strongly to a secondary syphilid.

Case 11. A man, aged 28, had had a sore throat for four weeks. Examination showed many mucous patches on the gums, tonsils and anterior pillars. The blood Wassermann was strongly positive—there were no cutaneous findings. There was no history of any primary lesion.

Case 12. A man, aged 42, had had a severe sore throat for three weeks having such marked constitutional symptoms that he had been unable to work. Several deeply ulcerated mucous patches were present. He gave a history of having had a primary penile lesion and later secondaries with mucous patches occurred; then he was given two intravenous treatments of neosalvarsan. Discontinuance of treatment by the patient finally allowed the infection to recur with marked severity. These relapsing or recurrent mucous patches are highly infectious, are often destructive, and may cause serious cerebrospinal disturbances; they result from inadequate or poorly managed treatment or are evidence to the patient's lack of resistance to Spirocheta pallida.

Late or tertiary lesions of mouth are essentially of three types 1. leukoplakia, 2. gummatous infiltration in the tongue or the mucous membranes, and 3. destructive bone lessions of the hard palate or jaw. (The perforated palate is quite diagnostic.)

Gummas begin as small nodules which frequently ulcerate. If they do not, they sclerose and form scar tissue. In case of doubt, a biopsy of an ulcer should be performed; the blood Wassermann is usually positive. Osseous gummas of the hard palate usually leave a resultant perforation that is quite easily recognized.

The stigmata of congenital syphilis, as Hutchinson's incisors, interstitial keratitis, and so forth, are well known.

Leukoplakia. Leukoplakia or so-called "smokers' tongue" may be of syphilitic or of traumatic origin. It consists of glistening, whitish, thickened patches on the tongue, lips or buccal sur-

faces. It is extremely important that it be recognized, for it is definitely a precancerous condition. The subjective symptoms vary from a slight, unpleasant dryness to severe pain. Fissures in such areas are very painful and mean rapidly approaching malignancy. In the luetic type it is necessary not only to treat the syphilis to decrease the incidence of new areas of leukoplakia but also to destroy any residual areas by diathermy or cautery to prevent the development of cancer. I agree thoroughly with Eller and Anderson[2] that radium and Roentgen rays are only mentioned in connection with the therapeutic agents of leukoplakia to condemn them. Smoking should be discontinued and any jagged teeth should be fixed. That all leukoplakias are due to smoking as stated by Bloodgood[3] is certainly erroneous.

Case 13. A man, aged 50, who was an incessant pipe smoker, accidentally noticed a fan-shaped whitish area on each buccal surface just behind each commissure. No evidence of syphilis was ever found; the leukoplakia was, no doubt, due to smoking.

Case 14. A woman, aged 33, had had a sore tongue of several months' duration. Examination of the tongue showed it to be almost covered with leukoplakia. The blood Wassermann was strongly positive. The tongue has completely cleared with antiluetic treatment.

Case 15. A woman, aged 29, had several glistening patches just posterior to each commissure. Behind these areas recurrent bullae appeared from time to time —they occurred on an erythematous base. The leukoplakia was considered secondary to these recurrent giant apthae. No real etiological factors have been found but soothing applications have produced a considerable improvement.

Fordyce's Disease. Case 16. A man, aged 42, had a group of some 12 to 15 small slightly elevated yellowish discrete areas just inside of each cheek. There had been no subjective symptoms. So-called Fordyce's disease is of no portent and is just as well left alone for treatment is no avail. Many observers have found a hypertrophy of the sebaceous glands.

Cysts. Soft, circumscribed, slowly enlarging cystic tumors are fairly common in the mouth and on the lips. These mucous retention cysts have to be thoroughly removed either by complete excision or by electro-thermic methods. A combination of these methods usually suffices. Mucous adenomas are occasionally found on the soft palate.

Tuberculosis. Tuberculous ulcers usually have an undermined ragged border and are usually painful. The tongue and lips are the sites of election (Darier[4]).

Case 17. A man, aged 24, observed recently had such an ulcer on the pharynx. A biopsy taken to confirm the opinion showed typical tuberculosis. Often there is pulmonary involvement. The lesion healed under local helio-therapy and no apparent focus has ever been found.

Common Diseases (Associated with Cutaneous Manifestations). Lichen planus and erythema multiforme are occasionally confined exclusively to the mucous membranes of the mouth. Pemphigus can start in such a way. More rare conditions are pellagra, leprosy, drug eruptions (as luminal or iodides), actinomycosis, blastomycosis, granuloma inguinale, and the lymphoblastomas. The erythematous swollen tongue of pernicious anemia must be kept in mind as an important diagnostic sign (Middleton[5]).

Case 18. A woman, aged 30, had had recurrent sores on the pharynx and hard palate for 6 years. According to her history, she had been treated for four years for syphilis for this condition. After several months' observation, recurrent bullae have occurred again and again upon a normal mucous membrane and I have felt that a diagnosis of pemphigus was justifiable—of a rather benign type inasmuch as no skin lesions have appeared.

Case 19. A man, aged 35, had had recurrent vesicles on the lips upon an inflammatory base. A concomitant bullous and iris type of eruption of extensors of forearms confirmed the diagnosis of bullous type of erythema multiforme.

Case 20. A boy, aged 18, had several itching papules of the glans penis. Investigation of mouth showed a fine grey network on each buccal surface with thickened areas at intersections or so-called nodal points, a typical manifestation of lichen planus.

Geographical Tongue. So-called "Wandering Rash" on the tongue is occasionally seen. Usually the patient is considerably alarmed. Treatment is usually of little avail.

Case 21. A man, aged 22, noticed that his tongue suddenly felt scalded after drinking coffee. Examination showed several large superficially denuded areas, typical of this syndrome.

Torus Palatinus. This entity is fairly common but not well known, at least not by this name. Dentists are well acquainted with it—a congenital hypertrophy of the bones at the medical junction of the hard palate. It is of no grave importance, being mentioned because it is sometimes confused with sarcoma or luetic periostitis.

Case 22. A woman, aged 35, had recently noticed a swelling in the roof of her mouth. There were no subjective symptoms. Examination showed a horny broad elevation in the mid-line by the hard palate. It

was a typical case of torus palatinus; no treatment was advised at that time.

BIBLIOGRAPHY

1. Fordyce, J. A. and MacKee, G. M.: Diseases of the Oral Mucosa. Arch. Dermat. & Syph., XIII, 601, May, 1926.
2. Eller, J. J. and Anderson, N. P.: Cancer Supervention in Skin Diseases (Clinical, Microscopic, and Therapeutic Considerations). Transactions of the Section on Dermatology and Syphilology, Jour. A. M. A., p. 359, 1929.
3. Bloodgood, J. C.: Oral lesions due to Vincent's Angina (what every physician and dentist should know about its recognition and treatment). Jour. A. M. A., 88: 1142-1145, April 9, 1927.
4. Darier, J. and Pollitzer, S.: A text-book of Dermatology, p. 549. Lea and Febiger, Philadelphia, 1920.
5. Middleton, W. S.: The Present Status of the Therapy of Pernicious Anemia. Norwegian-American Hospital Clinical Conference, April 1, 1930.

104 South Michigan Ave.

A DEVICE WITH FIXED SAFETY LIMITS FOR GAS INSUFFLATION AND LIPIODOL DISTILLATION IN TUBAL PATENCY EXAMINATIONS*

HORRY M. JONES, M. D.
CHICAGO

In considering the causes of sterility in the female, it is important to remember that the ovum has no motility of its own.

Normal conditions for pregnancy requires the passage of the ovum from the ovary to the uterus. This passage of the ovum from the ovary to the uterus requires: 1st, that the tube be patent and since the ovum has no motility of its own, the tube may be patent and yet the ovum cannot pass to the uterus if the mucous membrane is affected with any form of pathology such as to abolish the function of the ciliated epithelium.

The mechanical sweeping of the ovum down the tube by the ciliated epithelium, therefore, requires 1. normally functioning cilia, and 2. patency of the tube.

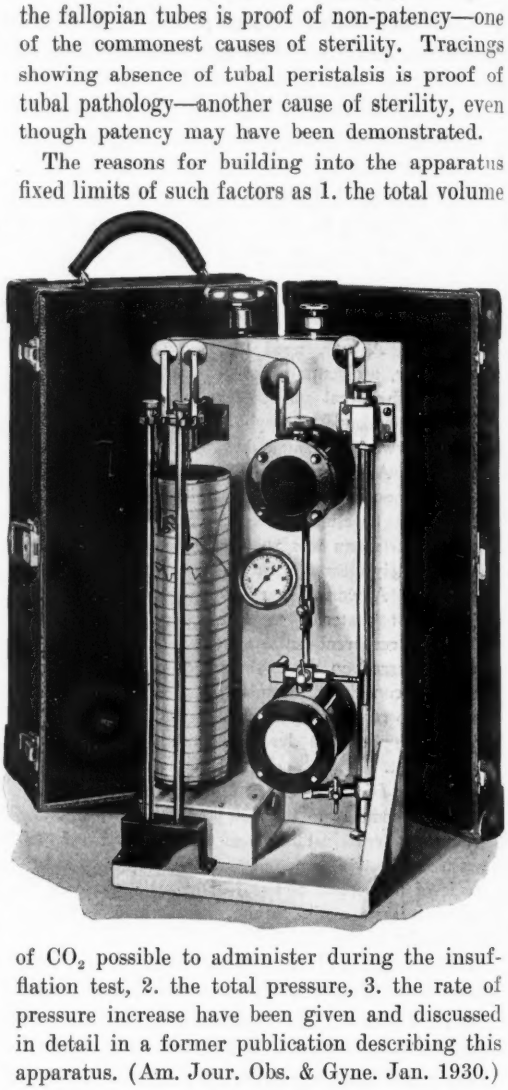
The Rubin test, originated in 1919, was devised by Rubin to demonstrate patency, and Rubin's further studies of the peristalsis of the fallopian tube showed that absence of tubal peristalsis was really a demonstration of tubal pathology such that the function of the ciliated epithelium had been lost.

In other words, the usual demonstration of patency is not sufficient; tubal peristalsis must also be proven before any rational prognosis in any given case of sterility can be made.

The type of apparatus here shown was designed to record by tracing the condition of patency or non-patency, and also to record by tracing the character of the tubal peristalsis from which could be judged the normal or pathological condition of the tubes and their ciliated epithelium.

Tracings showing failure of CO_2 gas to pass the fallopian tubes is proof of non-patency—one of the commonest causes of sterility. Tracings showing absence of tubal peristalsis is proof of tubal pathology—another cause of sterility, even though patency may have been demonstrated.

The reasons for building into the apparatus fixed limits of such factors as 1. the total volume



of CO_2 possible to administer during the insufflation test, 2. the total pressure, 3. the rate of pressure increase have been given and discussed in detail in a former publication describing this apparatus. (Am. Jour. Obs. & Gyne. Jan. 1930.)

DISCUSSION

Dr. F. Lee Stone, Chicago: In carrying out work of this nature some years ago Dr. Rubin worked out a device with a kymographic recording instrument and the blood pressure recording at the same time, which was rather cumbersome. About a year ago I took the proposition to Dr. Jones and suggested he figure out an instrument that would serve all these purposes and be

*Read before Section on Radiology, Illinois State Medical Meeting, May 22, 1930.

easier to handle, as well as combine these safety measures which he has included.

I have used this instrument in upwards of 135 cases and it is entirely a one-man instrument. The procedure is very simple. Care has to be taken, of course, in doing any tubal patency work, to obtain an airtight or a gas tight connection between the cervix and the cannula.

The value in recording the impulse of the gas as it passes through has been brought out by Dr. Rubin some two or three years ago. Considerable work on tubal peristalsis has been done.

Dr. Horry M. Jones, Chicago: In answering Dr. Orndoff's question in regard to the actual pressure that exists within the tubes, it is only necessary to recall the physical law that gas pressure is identically the same at all points in a closed system, and therefore, the patent tube has in it a gas pressure exactly equal to the pressure registered in the chamber of the apparatus, irrespective of abdominal pressure or other influences affecting the pressure within the tubes.

Case after case of patients who give the history of from one to many years of sterile married life have become pregnant within a month or two following the application of this test. It is, therefore, believed that the procedure has brought about conditions favoring pregnancy simply by disturbing the mucus plug in the cervix or temporarily dilating the cervix, or removing inspissated mucus from the tubes when these are not actually closed by adhesions.

COMMENTS ON CANCER TREATMENT

ALBERT SOILAND, M. D.
LOS ANGELES, CAL.

For centuries cancer has been known to the medical profession as an incurable disease. Up to the year 1890 surgery had accomplished more than any other agency for this intractable enemy of mankind. True, a great many caustic salves and pastes, as well as destructive acids, had been used by a certain group of physicians, and these applications undoubtedly destroyed a number of superficial lesions which in many cases may have been cancerous. Today this method of treatment has been abandoned for more humane and successful remedies.

In 1890 surgery in the most intellectual medical centers of the world could offer no reliable statistics which would prove a possible ten per cent. five-year cure of all types of cancer encountered. Between 1895 and 1900 both x-rays and radium were discovered. These agents were shown to effect marked changes in living cells, and it was found that they were able to heal a certain number of neoplastic lesions of the surface and also to have some effect on deeper structures. That decade, however, did not materially increase the ten per cent. of five-year clinical cures which surgery had by this time been able to bring about.

By 1910 a notable advance had been made in the knowledge of these mysterious forces, x-rays and radium, so that they together with surgery showed an approximate twenty per cent. five-year cure of all cancer cases subjected to treatment. This unquestionable improvement over previous results created renewed efforts on the part of the profession to increase their knowledge of surgery and radiation.

When the decade 1920 arrived, surgical skill had advanced, surgical technique had been improved; similarly both skill and technique in the use of x-rays and radium had been increased, and the statistics of approved and recognized clinics and hospitals showed a total five-year curability of thirty per cent.

We now reach the fourth decade of 1930. A number of us have kept careful watch of the work of creditable institutions both in this country and abroad, and we feel that we can conservatively claim at the present time that the total five-year curability of cancer is approximately forty per cent. It is of course obvious that no statistics of a mathematical exactitude can be established, but we believe the above outline to be practically correct.

During these past forty years many devices, numerous electrical and mechanical humbugs, sera of various types, and a long list of nostrums have been foisted upon the public as cures for cancer. Each and all of these up to the present time have proved failures. We fall back again, and yet again, on the help offered by the procedures mentioned in our opening paragraphs—surgery, by knife or electrical methods, and x-rays or radium, employed with a highly perfected technique.

Surgery is a method of precision which has apparently reached nearly, if not altogether, its highest level. Radiation, however, is a much younger science, the mastering of which no one at the present moment can rightfully claim. Nevertheless, progress in that direction is constantly recorded. The earlier hope that x-rays and radium would prove a universal cure for cancer can hardly be realized, but our clinical

studies and our researches in that direction must not relax.

It is significant to point out the fact that during the last twelve months the leading medical men of northern Europe have added the enormous amount of thirty-five grams of radium to their former holdings. Different institutions in the United States have, in the same time period, acquired approximately twenty grams of radium. The total cost of this amount of radium is approximately, at the present market price, five million dollars.

At the same time, the world's best electrical engineers have developed apparatus which generates an x-ray force which almost equals that of some of the rays of radium. These two agencies are now used in every modern and well equipped hospital in the world for the treatment of cancer. It does not therefore seem unlikely that at the end of the present decade the total curative action on cancer of all sorts may reach the happy figure of fifty per cent. clinically well for a five-year period or more.

In our present day work we court the closest possible cooperation with the surgeon and the pathologist, for this combination has made possible the gradual improvement in cancer treatment results which we have attempted crudely to interpret by decades in the preceding pages. Let us now briefly visualize how such cooperation has also been of untold benefit to the radiologist.

One of America's outstanding pathologists, Ewing, in his recent work on the pathology of bone, has observed some interesting effects of radiation in osteosarcoma which he reported to the staff of the Memorial Hospital in New York and to the Radiological Society at the Toronto meeting. Those subjects in whom radio-resistance was low, showed effects more than palliative, and in several cases apparent clinical cures were seen. A number of patients were shown, one of whom had been well for ten years following treatment for an osteogenic bone sarcoma of the thigh. In those tumors which Doctor Ewing found more radio-resistant, he obtained no appreciable local effects upon the primary growth. In several such cases studied, however, he found that while the local lesion went on unchecked under the most active radiation, no metastasis occurred, even in the type of sarcoma which, untreated, always metastasizes.

This brings up the question, Is it not possible to convert a primary malignant bone tumor into a safely operable one with the same success as in certain soft tissue tumors? Some of us have reasons to believe this to be a fact.

Lord Moynihan, of England, vouchsafes the opinion that surgery for cancer of the rectum, other than the construction of colostomies and similar mechanical work, will soon be discontinued. This is in direct contrast with the views of most of our present day proctologists. He also expresses his belief that it is poor surgery to use the cold knife in the eradication of cancer of the tongue; that in such vascular tissue there is grave danger of rapid cancer dissemination under the scalpel. Radium needles are his choice for treatment, employing as an auxiliary the electrical knife when indicated for gross removal of an offending mass. Likewise in cancer of the breast he has substituted radium implanation for surgery.

This clearly shows that surgery plus radiation therapy have demonstrated their survival in the long test of time by fitness, and that all other agents which have clamored for recognition have been weighed in the balance and found wanting. Referring to the colloidal metals as carcinolytic agents, that of lead, first introduced by Blair Bell of Liverpool, gave promise of accomplishments which have not been fulfilled. We cannot deny to Bell the results of his early work which actually demonstrated certain clinical cures in patients beyond the scope of surgical or radiation help. Yet, other workers on the Continent and in America have been unable to duplicate Bell's results, and today, except in a few instances, the majority of cancer students have discontinued the method. We ourselves made clinical tests in a number of patients under a rigid regime, but our response was so ineffectual and hazardous to the patients that we discontinued the process. Of the other colloidal metals, that of copper we likewise tested out, but soon gave up as useless. Next came colloidal gold which, if for no other reason than that it was sponsored by the name of a well known clinician, had a sudden wave of popularity. It is also disquieting to know that altogether too many physicians, who ought to know better, are injecting colloidal gold into cancer patients of every type, without the slightest clinical evidence to

demonstrate its value as a curative agent in this disease.

A bismuth colloid came to us more recently from Germany, and while it is no more specific for cancer than the other colloids mentioned, it has one attribute which makes it more desirable and that is its freedom from toxicity, even in major dosage. We have made a study of this preparation over a year's time in the hope, as expressed by its sponsors, of increasing the radiosensitivity of tumor cells. Whether or not this actually occurs is not yet established; nevertheless, local reactions in a few patients thus treated seem to warrant a further study and a continuance of its work. The preparation is called Bismuth Diasporal "360," and may be obtained in the open market.

Attention may also be briefly called to the experimental use of glucose as a cancer adjuvant treatment. Our own limited experimentation with this agent does not warrant a conclusion, but we do not believe it to be of sufficient value to continue.

Now to touch upon another matter, which is one of the worst abuses of this intelligent age, the use of heat lamps, friction and medical diathermy upon cancer patients in the hands of irregular practitioners. This is not only deplorable but criminal, and should be prohibited. Visualize, if you please, a slowly growing carcinoma of the surface where all of the patient's protective mechanism, including the neighboring lymphatics, are frantically attempting to destroy the invading carcinoma cells. To such a field is now directed heat, massage, or some other ill-advised procedure, with the result that the local circulation is promoted and the cancer cells are stimulated, nourished, and invited into the recesses of the body to produce metastatic formations. This is also well exemplified in women with breast tumors, who so frequently run the gamut of manipulation by unskilled hands. Metastatic carcinoma of the breast grows fast enough without added stimulation, but such growth can almost be seen to advance from day to day when the unfortunate subject takes the "therapeutic violet ray" treatment or similar hokum from the first-floor "doctors" with "degrees" tacked after their names not obtained in recognized and scientific institutions of learning.

It is neither possible nor desirable in the brief time allotted this paper to attempt covering the whole cancer treatment field. If in these rambling remarks a few facts are found which will give the cancer student some food for thought, the writer's efforts will be amply repaid.

A fertile field for research is opened in a study of the role of the ductless glands in maintaining the metabolic balance of the human family. It is questionable if this research will ever lead to a cancer cure but it will certainly yield information of profound importance to all mankind.

Reasoning from a biological standpoint, it appears that we can well eliminate the specific cancer germ theory, and employ more wisely the time spent in fruitless research in this direction.

Likewise, the varied attempts to seek out a curative serum appear no longer reasonable. As has been pointed out by various authorities, no specific serum has ever been produced except for a disease which was self-limited and against which the body had the ability to manufacture an antibody or an antitoxin. There is not the slightest demonstrable scientific evidence that cancer has ever produced a self-corrective serum or an immunizing agent of any sort.

The one stubborn factor which may or may not be solved is the indomitable cancer cell. When the secret of this has been wrested from nature, then we may well expect to eradicate cancer from the face of the earth.

We must not forget, however, the painstaking research work of Doctor Maud Slye which demonstrates so vividly the hereditary factor in cancer distribution. Nor must we forget the possibility, if remote, of at some future time breeding the cancer complex out of the human race in the same decisive manner which Doctor Slye has so effectively demonstrated in the mouse family.

Pending the solution of these momentous tasks, our apparent duty is to give to the cancer problem a wide open publicity. If the public at large were as conversant with the situation as the intelligent physician, we might hope to cope with all cancer pathology in its earliest and curative stage. This would perhaps slowly but nevertheless, surely make heavy inroads upon the mortality from cancer, and this appears at the present writing to be the most sensible method of procedure.

I fully believe that with such a campaign, and as effective as that waged against tuberculosis and syphilis, cancer will yield eventually. This will be accomplished only by careful preventive hygiene, by proper treatment as outlined, by an intensive research campaign, and by the whole-hearted aid of the general public in connection with persistent educational and cooperative work by a united medical profession.

1407 S. Hope St.

MENTAL HYGIENE OF ADOLESCENCE*

JOHN W. H. POLLARD, M. D.

EVANSTON, ILL.

Theoretically, there should be but one cause of death—Old Age. Practically a very small percentage of deaths arise from this cause. Disease, in one form or another, steps in and ends the life span more or less prematurely.

Deaths may be classified as Constitutional—arising from conditions which develop within the body; and Environmental—the reactions of unsatisfactory surroundings. The basic science of Public Health (Public Hygiene) is primarily concerned with the prevention of premature deaths caused by environmental conditions. Personal hygiene, on the other hand, is largely concerned with the prevention of premature deaths from constitutional causes. Personal hygiene is, then, the science of the development and maintenance of normal health.

Strange as it may seem, the one subject—namely, how to keep healthy—which every fair-minded person admits should be taught thoroughly, has been largely neglected. With all the persistent agitation for educational reform, there remains, in a measure, the same indifference to the proper care of the body regarding which Herbert Spencer lectured the pedogogic world fifty years ago. (Pyle-Personal Hygiene.)

All knowledge passes into *action* and that knowledge which leads men to better physical lives is a communal as well as an individual gain. The leading kinds of activity which constitute human life are: those which prepare for a direct self-preservation; those which prepare for indirect self-preservation; those which prepare for parenthood; those which prepare for good citizenship, and those which prepare for miscellaneous refinements. All of these activities are inter-dependent and are sub-divisions of the general scheme of personal hygiene. Finally, personal hygiene constitutes a series of medical problems which have to do with the proper functioning of the digestive, respiratory, auditory, visional, muscular and central nervous systems. It is, therefore, applied physiology and a proper understanding of certain elemental truths must first be acquired before it can be applied. The natural method of inculcating these truths should be rational education. The literature for the layman pertaining to personal hygiene is in great measure unsatisfactory and irresponsible. Many so-called "health books" are of very questionable authorship, often th· compilation of a layman, an inaccurate physiologist, or a moralist of vague opinions, with, unfortunately, a tendency to cater to the sensuous.

Too much stress cannot be laid upon a normal, sane, intelligent mental hygiene regimen. With regard to the brain and nervous system the hygienic problem is a far-reaching one and leads us back even to the period antedating the birth of the child. Heredity may be a factor but fortunately for the educational outlook, the evidence has begun to accumulate that a morbid inheritance is not the inevitably crushing and baneful thing that it has been thought. We come into the world, each one a being of limited capacity, but in other respects free to become what circumstances make us, and responsible, to the extent of our capacity, for our lot. We bring no ticket of leave which stamps us as drunkards or maniacs on probation, but we do bear, in the histories of our ancestors, a certificate that hints by what efforts and by what avoidances we can make ourselves reasonable successes in our respective lines. There is no original sin, and not even, as it seems to me, original propensity, but only original capacity and original limitation, and even limitation is only another name for latent capacty. (Putnam—Not the Disease only, but also the Man.)

Passing over the nervous and mental hygiene period of infancy and the pre-school age, and the school age up to that of puberty, let us pause for a moment or two to consider carefully the reaction of the sex instinct upon the boy and girl.

There is no question that in both sexes (but especially in boys) the psychical effect of puberty often outweighs the physical; hence we begin to observe the real awakening of the "ego," of the condition of self-consciousness, the proper trend of which means so much for the health of the nervous system. It is a period certainly when nervous and mental aberrations are not uncommon, but are we right in attributing them all, as certain authorities are inclined to do, to brain overwork? Such a contention seems wholly unjustified except in rare instances. The root of the evil lies largely in the mawkish sentimentality and artificial modesty which possess a large percentage of parents

*Read before Section on Public Health & Hygiene, Illinois State Medical Society, Joliet, May 21, 1930.

throughout the land, and prevent them from explaining to their children the mental as well as physical significance of the changes which the latter are destined to undergo at this period. The result is, in the case of the girl, that the establishment of the menses often comes as a mental shock which may prove the last straw in the genesis of a nervous breakdown, for which her "studies" have already paved the way. In the boy the reaction is different and frequently far more disastrous, for he, finding himself in the possession of a newly awakened instinct, is often led into habits which may mean little less than absolute mental and nervous ruin.

This subject is well worthy of the serious attention of every parent and teacher. Much ill-considered treatment of the problem has found its way into text-books of medicine and medical writings in general. This, it seems, arises from an undue exaltation of the importance of the direct physical results. Such teaching is dangerous, for the naturally self-conscious youth is imbued by it with the fear of irreparable bodily injury, self-inflicted. A vicious cycle is established. He quickly becomes self-analytical, and by autosuggestion succeeds in bringing about actual physical suffering. The primary factor of moment is, however, the implantation of the morbid fear, and unless this is quickly eradicated, the complete nervous undoing of its victim is in time effected by misguided medical or lay advisors, or by the criminal insinuations of designing quacks, whose villainous publications are constantly flooding the country. The teaching of practical morality is the key to the problem. The responsibility of the entire matter rests primarily with parents and teachers; but to judge from the prosperity of the very lowest and most offensive sort of charlatans and from the large number of persons who, under the scourge of the most pitiable mental anguish, seek the advice of reputable physicians, it would seem that this responsibility, great and significant as it is, rests, in many instances, with appalling lightness. (Courtney—Hygiene of the Nervous System.)

As a director of student welfare and supervisor of university student physical activities covering a period of twenty years I feel that I know, fairly well, the mental and physical reactions of the boy of college age. Often have I found a lad whose interpretation of the sex-instinct was solely that which he had absorbed from his chums in the preparatory school. Often have I been forced to acknowledge that many young men of college age have failed to appreciate their responsibilities to future parenthood. Many have demonstrated pitiable ignorance of the ravages of the social diseases and the possible unfortunate reaction of these diseases upon posterity. Many times have I stood as father confessor to boys who, upon presenting themselves for the Freshman physical examination, have been found to be suffering from gonorrhea or from syphilis in the contagious stages. More than one student, the victim of self-abuse, has taken me into his confidence and pleaded for assistance in the effort to break himself of the habit. By far the larger percentage of these cases bewail the fact that their fathers or older brothers had not sufficiently interested themselves in their behalf to give them common sense, authentic information pertaining to sex relations. "If my father or my older brother had only 'set me straight' and cautioned me relative to the pitfalls ahead of me I could have avoided all this," said one young man of 18 years who was suffering from syphilis in the secondary stages. A responsibility unfulfilled that resulted in years of mental anguish as well as physical impairment!

Parents whose children are approaching the age of puberty must surely face and recognize the danger signal of adolescence. Every father should talk candidly and intelligently with his sons relative to the wonders of sex and the true place it holds in the human life span. The son's future responsibility to the family should be plainly stated, and the pitfalls of promiscuous intercourse stressed. The father has the confidence of his son. He should be the one to give this information.

Likewise the mother should take her adolescent daughter into her confidence, explain the physiology of the menstrual period, and impress her with the responsibilities of future motherhood.

In closing, my appeal is to the fathers and mothers of this country to make confidants of their offspring and to give them the authentic information relative to the phenomena of reproduction that is their just due. Should the parents feel that they do not have the ability to do this, then the family physician should be consulted and the responsibility turned over to him. "An ounce of prevention is worth a pound of cure." The child is worthy of his heritage.

(Note: This little paper has been hastily developed within the space of a comparatively few hours to meet a program emergency. Quotations have been used freely and at length. I am in thorough accord with the writers quoted. Their own expressions cannot be improved upon.)

THE ULTIMATE CURE OF CANCER*

E. G. C. WILLIAMS, M. D.,
DANVILLE, ILLINOIS

If and *When* the cure for cancer comes; it will not be the result of an accidental discovery by someone who is trying a little of everything in the hope of stumbling upon the great specific, but it will come as a climax to a definite series of events which surely will come first, and upon which the "Ultimate Cure" must depend.

The first of these contingent events is a more complete knowledge of the chemistry and the control processes in the primary differentiation of embryonic tissue and a knowledge of why after early cell divisions take place certain cells turn their characteristics toward the lining and glandular structures, certain toward connective tissues and others toward coverings, appendages, nervous structures, etc. It is in this primary differentiation of embryonic cells that the characteristics of future malignant growths are determined and it is possible that the anlage of the adult neoplasm takes place in the earliest cell divisions as suggested in the tendency of cancer tissues to dedifferentiate and return to characteristics resembling early embryonic structures.

The second event is a complete study and knowledge of the chemistry of cell metabolism and growth in the adult structures. There is a *why* for every body process and none must be classed as merely natural processes because we do not know the *why*. Multi-millions of body cells perform their work for many years without division or reproduction until something happens that produces the conditions favorable to or demanding mitosis. The cells of muscle fibres have a lifetime of many years and perform their average duties without increase in number, yet after an injury or even by increased use and exercise of their activities, they begin to reproduce and repair the injury or produce more muscle to compensate for the added work. Certainly there must be something in the inherent qualities of these cells that make them react to the conditions produced. If this repair were the result of a systemic reaction to the conditions that demand this prolliferation and a systemic urge was sent out then not only the needed cells but all cells of the type all over the body would start proliberating. This may be classed as further proof of the local rather than the constitutional character of cancer.

The recently published[1] report of the production of granulation tissue in old ulcers by use of p-thiocresol is almost startling in its possibilities. The men who have published these reports have long been working on the chemistry of cell metabolism and find that at the time of mitosis there is present in the cell a change in the sulphydryl groups and by adding a chemical containing a sulphydryl in the form of thiocresol mitosis has been accomplished. It has been noted by these men that "wounding the surface cells of a root tip of zea mays by scratching with a fine needle instantly illicits the chemical reaction of the sulphydryl group." Thus the chemical process which seems to be necessary to the growth and reproduction of cells is produced by damaging living cells and their healing process is started immediately. I have asked these men if it is not possible that they are close to the cause of cancer and that in the human body the sulphydryl group reaction may be produced by mechanical or chemical irritations and that the uncontrollable mitosis of a malignant neoplasm may be engendered. In a reply from Doctor Stanley Reimann, he says: "I believe it is not only possible, but probable, that the sulphydryl group plays a big part in overgrowth, as you suggest, in mechanical or chemical reaction." This recent work has produced the first break in my belief that we will not find a specific cause for cancer.

Another event which may be classed as an improbable possibility is the discovery or evolution of an entirely new and at present unknown science or application of some undiscovered natural law which may be as revolutionary in our time as the discovery of the bacterial cause of disease was in the last half of the nineteenth century.

A great succession of events might be postulated and imagination given free hand in predicting our future but the three events discussed have appealed to me as being the most obvious points in our progress for the next few years. I am convinced that the future treatment will continue to be local for a local disease and not systemic; that any possible specific will be applicable to the lesion as an infiltration of a chemical agent, or the application of a physical force

*Read before Section on Radiology, Illinois State Medical Meeting, May 22, 1930.

which will produce chemical changes in a lesion that has been *infiltrated* resulting in a specific reaction between the infiltrate and the cancer. This postulate is credited to the ability of x-radiation to alter the physical and chemical form of many substances.

Surely no specific cure can be expected or hoped for until the cause is known and we may still be a hundred years from the cause. Many things we do know and great advance has been made in cancer control through this knowledge. Many points are still in controversy and the element of personal belief and conviction enters the work of each of us, yet not sufficiently to greatly alter our methods of procedure. But I feel that personal belief is important and will influence the extent of our credulity as new points in progress are published. In order that I may stand clear and on firm ground with myself for future work, I have considered each of the controversial points and made a definite statement of my belief which I give to you in the "Creed of a Cancer Therpist" dated as of May 22, 1930.

I Believe:

That cancer is a local and not a constitutional disease;

That it is due to embryonic misplacement of cells, incomplete differentiation of cells in mature structures and developmental failures or malformations;

That it is a dedifferentiation of cells with attemped return to embryonic characteristics;

That cancer growth may be started by disturbing a quiescent state of misplaced cells, by chronic irritation or acute anatomical insult;

That it is not due to any specific infection or virus;

That although it is neither inheritable nor transmissible there may be a familial predisposition;

That cancer is preventable in many cases;

That by reason of the widely different types of cancer we will never have a specific cure in the form of vaccine, antitoxin, extract or chemical agent applicable as a constitutional corrective;

That the search for a cause of cancer may open an entirely new and revolutionary field of science;

That most cancers are curable if recognized early and treated radically and immediately;

That cures will continue to depend upon the complete destruction or eradication of all possible malignant tissue by x-radiation, radium, surgery and electro-thermic methods;

That it is unwise to become overenthusiastic about any one form of cancer thereapy and that wisdom lies in the use in each case of the methods best suited to that particular person and condition.

DISCUSSION

Dr. Alden Alguire, Belvidere: I have been interested in cancer for a good many years, and in the handling of cancers of all kinds. What about heredity? In over ninety per cent. of my cases I have found there was cancer in the ancestry even as far back as the great grandfather.

Dr. E. G. C. Williams, Danville: Concerning heredity in cancer, I think the outstanding work, and practically the greatest work in this, has been done by Dr. Maude Sly, and in her work on animals I believe she established the fact they have a definite heredity. In my work I take a very careful family history, and if you will take your own family history I doubt if there is one of you who will find his family free from cancer. I have found in my family history one case of cancer in a great grandparent. But on the laws of heredity, and as we understand heredity, which is the systematic passing on of conditions from generation to generation, so far I fail to find one point of proof of the heredity of cancer. Even in the families where there are many cancers in the history, we find them of different types and of different anatomical locations.

REFERENCES

1. Reimann, Stanley P.: "Use and Reason for the Use of Thio-cresol to Stimulate Wound Healing," J. A. M. A. 94: 1369 (May 3), 1930.

THOSE UNTOLD HARDSHIPS

At a reception in Washington, says the *Boston Transcript,* the lion of the evening was a distinguished traveler and explorer. A lady said to him, "It must have been terrible, your experiences; and you must have suffered untold hardships and privations."

"Well, I can hardly call them untold sufferings and hardships," he explained with a smile. "The fact is, I've been telling them all season to large audiences."

Society Proceedings

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, Jan. 21, 1931

SYMPOSIUM OF THYROID DISEASES

Carbohydrate Metabolism in Thyroid Disease.....
.....Robert W. Keeton

Changes in Cellular Permeability in Thyrotoxicosis
.....W. F. Peterson

The Interrelationship Between the Thyroid and Pregnancy.....F. H. Falls
Factors of Safety in the Surgical Treatment of Goiter..... F. G. Dyas

Regular Meeting, Jan. 28, 1931

Mr. Leonarde Keeler of the Scientific Crime Detection Laboratory affiliated with Northwestern University, will speak on "Practical Application of Emotional Changes."

Marriages

THEODORE H. GASTEYER, Wilmette, Ill., to Miss Anna Heilig, Dec. 31, 1930.

JOHN HENRY LINSON to Miss Helen Pauline Satre, both of Chicago, Sept. 13, 1930.

LAURENCE F. ROCKEY to Miss Flossie Priewe, both of Orangeville, Ill., Oct. 11, 1930.

JACOB SAMUEL, Chicago, to Miss Esther Lefkovitz of Oak Park, Ill., Nov. 9, 1930.

ARTHUR E. A. WANDERER to Miss Emma A. Carlsen, both of Chicago, recently.

Personals

Dr. Frank Smithies was recently elected a foreign member of La Société Médicale des Hôpitaux de Paris.

Dr. Maurice A. Bernstein addressed the Chicago Orthopedic Club, January 9, on "Synovectomy of the Knee Joint."

Dr. Ralph C. Hamill was recently elected president of the Illinois Society for Mental Hygiene.

Dr. Gerald Webb of Colorado Springs spoke before the Chicago Tuberculosis Society, January 8 on "Laennec."

Dr. Nathaniel Allison, among others, addressed the Chicago Surgical Society, January 2, on "Arthritis as a Surgical Disease."

Dr. Calvin T. Hood was recently honored by the Garfield Park Hospital officials on completion of thirty-nine years of service with that institution.

Drs. Joseph S. Eisenstaedt, Robert H. Herbst and Harry B. Culver participated in a symposium on urinary calculi before the Chicago Urological Society, January 22.

Dr. Ernest Sachs, St. Louis, addressed the St. Clair County Medical Society, East St. Louis, January 8, on "Traumatic Injuries of the Brain and Spinal Cord."

Dr. Harvey J. Howard, St. Louis, addressed the Chicago Ophthalmological Society, January 19, on "Research and Postgraduate Projects in Ophthalmology at Washington University."

Dr. Casey Wood, recently of Stanford University, California, has spent the last year in London and in travel in Europe. He has settled for the winter at the Hotel Eden in Rome.

Dr. Margaret W. Gerard has resigned as psychiatrist at the Institute for Juvenile Research to accept an appointment on the staff of the student health service at the University of Chicago.

Dr. Pashupati J. Sarma has resigned as associate in the surgical department of Loyola University School of Medicine and accepted a similar position at the University of Illinois College of Medicine.

Dr. Frank Billings was made an honorary life member of the American Occupational Therapy Association, January 3, in recognition of his work in developing modern methods and wider use of curative occupations for the sick and disabled.

Dr. Lester R. Dragstedt, among others, addressed the Chicago Society of Internal Medicine, January 26, on "Significance of Failure of Reabsorption of Digestive Juices in Some Gastro-Intestinal Disorders."

Dr. Mabel Masten, Madison, Wis., spoke on encephalitis, and Bertha Kaplan on "Parasitic Infections in Chicago" before the Chicago Council of Medical Women, January 9.

Dr. Lucius H. Zeuch gave an address, January 6, in Memorial Hall, Norwegian American Hospital, on "Italy, the Cradle of Scientific Medicine and the Eighth International Congress that Reviewed the Story."

Dr. Ernest Sachs, professor of clinical neurosurgery, Washington University, St. Louis, will hold a clinic in Blessing Hospital, Quincy, February 9, at 9 a. m.

News Notes

—Dr. Bronson Crothers, Boston, addressed a joint meeting of the Chicago Pediatric Society,

the Chicago Neurological Society and the Chicago Institute of Medicine, January 30, on education of patients with cerebral palsy.

—The Chicago Society of Allergy was addressed, January 19, among others, by Dr. Isador Pilot on "Hypersensitiveness in Arthritis Due to Hemolytic Streptococci."

—Drs. Charles H. Eyermann and French K. Hansel, St. Louis, addressed the Peoria City Medical Society, January 20, on "What Every Physician Should Know About Allergy," and "What Every Rhinologist Should Know About Allergy," respectively.

—Dr. Clarence W. Hopkins and George de Tarnowsky addressed the Chicago Society of Industrial Medicine and Surgery, January 7, on "Double Dislocation of the Head of the Femur in the Adult With Recovery," and "Traumatic Injuries of the Bladder and Urethra," respectively.

—Dr. John A. Wolfer, Chicago, addressed the Warren County Medical Society, January 8, on "Diagnosis and Treatment of Carcinoma of the Rectum and Sigmoid," and Dr. William H. Holmes, Chicago, "Modern Conceptions of Nephritis."

—The Chicago Roentgen Society was addressed, January 14, by Drs. Max M. Peet, Ann Arbor, Mich., on "Ventriculography"; Eugene P. Pendergrass, Philadelphia, "Encephalography, Its Indications and Contraindications," and Percival Bailey, "Use of Air Injections in Nervous Diseases."

—At the Chicago Laryngological and Otological Society meeting, January 5, G. O. Russell, director of the phonetics laboratory, Ohio State University, Columbus, gave a motion picture demonstration of "Normal Interior Laryngeal Functions Which Block the View of the Glottal Lips," and Dr. G. Henry Mundt, Chicago, discussed the audiometer.

—The Lewis Memorial Hospital was formally dedicated January 4. The building, which was formerly the Lakota Hotel, was endowed by F. J. Lewis as a memorial to his wife and offered to Cardinal Mundelein. It is designated as a unit of the Loyola School of Medicine and will specialize in maternity cases under the direction of the Sisters of Providence of Montreal.

—Speakers at the meeting, January 12, of the Chicago Pathological Society were William H. Taliaferro, Ph. D., Dr. Paul R. Cannon and Sarah Goodloe, on "Relation of Splenectomy to the Resistance of Rats to Trypanosoma Lewisi"; A. P. Locke, Ph. D., and Edna R. Main, "Copper and Iron Content of the Blood in Cancer and in Pregnancy"; Franklin S. Dubois, "Chronic Bronchitis with Foreign Body (Elastic Fibers) Reaction of the Lungs"; Dr. Ruth Tunnicliff, "Colonies of Hemolytic Streptococci on Chocolate Agar." Dr. Edward H. Hatton presented a case report of an unusual odontoma.

—A breast milk collecting station has been established by the pediatric department of Cook County hospital where mothers are paid for breast milk, which is collected twice daily by a trained dietitian, sterilized and used for the feeding of premature, weak or sick infants. The board of directors of the Cook County School of Nursing has provided funds to pay these mothers. Physicians having patients, mothers with excess milk, are asked to refer them to the pediatric department. Mothers are given a complete physical examination, including a Wassermann test, the babies are examined and the home conditions are investigated.

—The Chicago Gynecological Society was addressed, January 16, by Dr. William M. Thompson on "Endometriosis of the Umbilicus"; Dr. Andrew C. Ivy, Carl Hartman, Ph. D., and Dr. Arthur Koff, "Contraction of Monkey Uterus sub Partu"; Dr. Frederick H. Falls, "Observations of the Use of Lugol's Solution in Hyperemesis Gravidarum," and Dr. Robert M. Grier, "Fetal Mortality."

—Alpha Omega Alpha of the University of Illinois College of Medicine, annual lecture will be given on February 18, 1931, by Dr. Walter Beering of Des Moines, Iowa, National President of A. O. A.

—On January 21, Mr. Tom Jones addressed the Medical History Club of the University of Illinois College of Medicine on "Modern Art."

—The French Lick Springs Hotel Co., French Lick, Ind., announce to the profession that, effective March 1, 1931, Dr. William Edward Fitch will be Medical Hydrologist and Medical Director. Dr. Fitch, for many years past, has

been Medical Director of the Bedford Springs, in Pennsylvania.

—At the Clinical Conference Monday, January 19, of the Medical Staff of the Methodist Hospital of Central Illinois, Peoria, the following program with presentation of cases was given: 1. Melanoscarcoma, Dr. S. M. Miller. 2. Intestinal Obstruction, Dr. R. Sutton. 3. Osteitis Fibrosa, Dr. J. Connell. 4. Postmortem Brain Specimen from Cephalography Case, Dr. Orville Barbour.

—A dinner was given by Dr. Max Thorek in honor of Professor Magnus Hirshfeld, head of the Institute for Sex Research of Berlin, Germany. About one hundred physicians and dignitaries of the various professions were present. The affair was given in the Crystal Room, at the Blackstone Hotel, on Monday evening, January 12, 1931. Among the principal speakers were: Dr. John R. Harger, President-elect of the Chicago Medical Society; Dr. Morris Fishbein, Editor, the Journal of the American Medical Association; Honorable John Gertin, Austrian Consul; Dr. H. F. Simon, German Consul, and others. After leaving Chicago, Professor Hirschfeld will continue his lecture tour in California, Hawaii, Japan, China, and return via Siberia, stopping off at Moscow to arrange for the forthcoming Congress on Sex Research.

—Dean W. B. Day of the School of Pharmacy, University of Illinois, addressed the Medical History Club of the College of Medicine, on January 7, subject: "The History and Pharmacy of Some Important Drugs Used in Medicine."

Deaths

Henry G. Armbruster, Steeleville, Ill.; Homeopathic Medical College of Missouri, St. Louis, 1881; aged 73; died, Dec. 3, 1930, of nephritis.

Ransom Moore Barrows, Chicago; University of Michigan Medical School, Ann Arbor, 1877; Hahnemann Medical College and Hospital, Chicago, 1884; aged 81; died, January 2, in Evanston, of cerebral hemorrhage and arteriosclerosis.

John Francis Beseler, Chicago; Jenner Medical College, Chicago, 1908; member of the Illinois State Medical Society; aged 51; died, Dec. 24, 1930, of hypostatic pneumonia, acute dilation of the heart and cerebral hemmorrhage.

Charles Boehm, Highland Park, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1895; aged 78; died, Dec. 6, 1930, of chronic myocarditis.

Edward Wyatt Cannady, East St. Louis, Ill.; Washington University School of Medicine, St. Louis, 1902; president and for many years member of the board of education; on the staff of St. Mary's Hospital and formerly on the staff of the Christian Welfare Hospital; aged 57; died, Dec. 13, 1930.

John W. Cantrall, Rochester, Ill.; St. Louis College of Physicians and Surgeons, 1894; member of the Illinois State Medical Society; aged 67; died, Dec. 22, 1930, of heart disease.

Walter G. Du Four, Batavia, Ill.; Northwestern University Medical School, Chicago, 1900; aged 65; died, Dec. 12, 1930, of cerebral thrombosis.

Arnim Carl R. Ecke, Chicago; Rush Medical College, Chicago, 1903; member of the Illinois State Medical Society; aged 56; died, January 7, of chronic myocarditis, nephritis and arteriosclerosis.

George S. Edmonson, Kankakee, Ill.; College of Physicians and Surgeons, Chicago, 1896; member of the American College of Surgeons; past president of the De Witt County Medical Society; formerly mayor of Clinton, superintendent of the Kankakee State Hospital; aged 59; died, January 11, in the Illinois Central Hospital, Chicago, of septicemia, following amputation of his right leg on account of gangrene.

Martin Eugene Fuller, Chicago; National Medical University, Chicago, 1905; aged 63; died, January 7, of cerebral hemorrhage and paralytic ileus.

Henry Bixby Hemenway, Springfield, Ill.; Chicago Medical College, 1881; for more than eleven years medical assistant in the division of vital statistics of the state department of public health, and formerly district health superintendent; author of "Healthful Womanhood and Childhood," "Legal Principles of Public Health Administration," "Essentials of Veterinary Law," and others; aged 74; died, January 1.

Ross Edgar Hunt, Belvidere, Ill.; Northwestern University Medical School, Chicago, 1925; on the staff of St. Joseph's Hospital; aged 29; died, Dec. 20, 1930, in the Wesley Memorial Hospital, Chicago, of septicemia.

Anna Cornelia Landman, Chicago; Jenner Medical College, Chicago, 1905; aged 56; died, Dec. 13, 1930, in the West Suburban Hospital, Oak Park, Ill., of carcinoma.

Harry Augustus Littlefield, Peoria, Ill.; Marion-Sims College of Medicine, St. Louis, 1899; served during the World War; aged 56; died Dec. 16, 1930, of heart disease.

Irving Angel Porges, Chicago; University of Illinois College of Medicine, Chicago, 1903; aged 48; died Nov. 12, 1930, of chronic myocarditis and nephritis.

Harry Alexander Ware, Chicago; Rush Medical College, Chicago, 1898; on the staff of the Illinois Masonic Hospital; aged 55; was killed January 9, at Miami, Fla., in an aeroplane accident.

, 1931

1895;
tis.
Ill.;
Louis,
of the
Hos-
Welfare

s Col-
of the
ec. 22,

estern
d 65;

l Col-
Medi-
hronic

ege of
of the
of the
yor of
Hos-
s Cen-
mputa-

Medical
ary 7,

hicago
years
tics of
rmerly
althful
f Pub-
erinary

vestern
e staff
ec. 20,
go, of

Medical
, 1930,
Ill., of

Marion-
d dur-
930, of

Illinois
d Nov.

Medical
Illinois
9, at